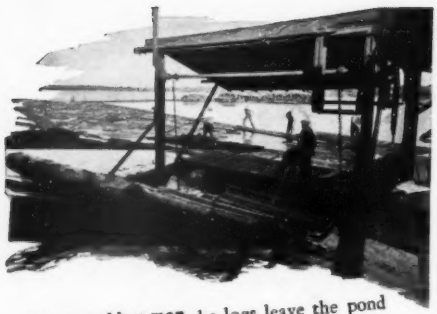
LIBRARY
RECEIVED
FEB 23

# Pacific PULP & PAPER Industry

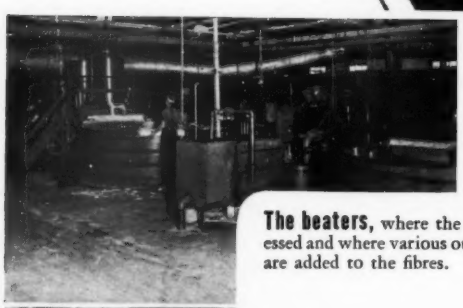


**Like marching men** the logs leave the pond for the slashers which cut them to short lengths.

# *How Consolidated makes* "LIFE'S" *paper with the help of* PENNSYLVANIA SALT CHLORINE

**The barking drums** strip each log of bark for inspection and sorting.

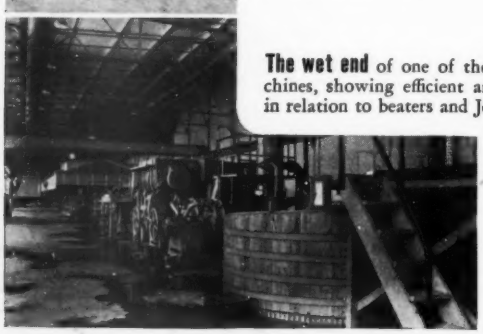
**Reduced to chips** the wood is digested into pulp which is seen here being screened in the bleach plant.



**In bleaching "Life's"** paper Consolidated Water Power & Paper Company uses liquid chlorine produced by Pennsylvania Salt Manufacturing Co. This panel controls the application of the chlorine by the Dispersion Method in the sulphite bleach plant.

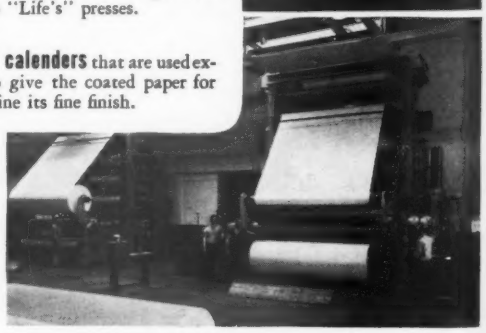
**The beaters,** where the pulp is processed and where various other materials are added to the fibres.

**Formed, dried, and coated** in one operation by newly invented paper machines such as this one, 40 carloads of fine coated paper a week go from this mill to "Life's" presses.



**The wet end** of one of the new machines, showing efficient arrangement in relation to beaters and Jordans.

**Two super calenders** that are used exclusively to give the coated paper for Life Magazine its fine finish.



**A few of the Pennsylvania Salt Manufacturing Company products:**

PENNPAINT
AMMONIA
CALCIUM HYPOCHLORITE
PENCHLOR ACID-PROOF CEMENT
ASPLIT CEMENT
CAUSTIC SODA

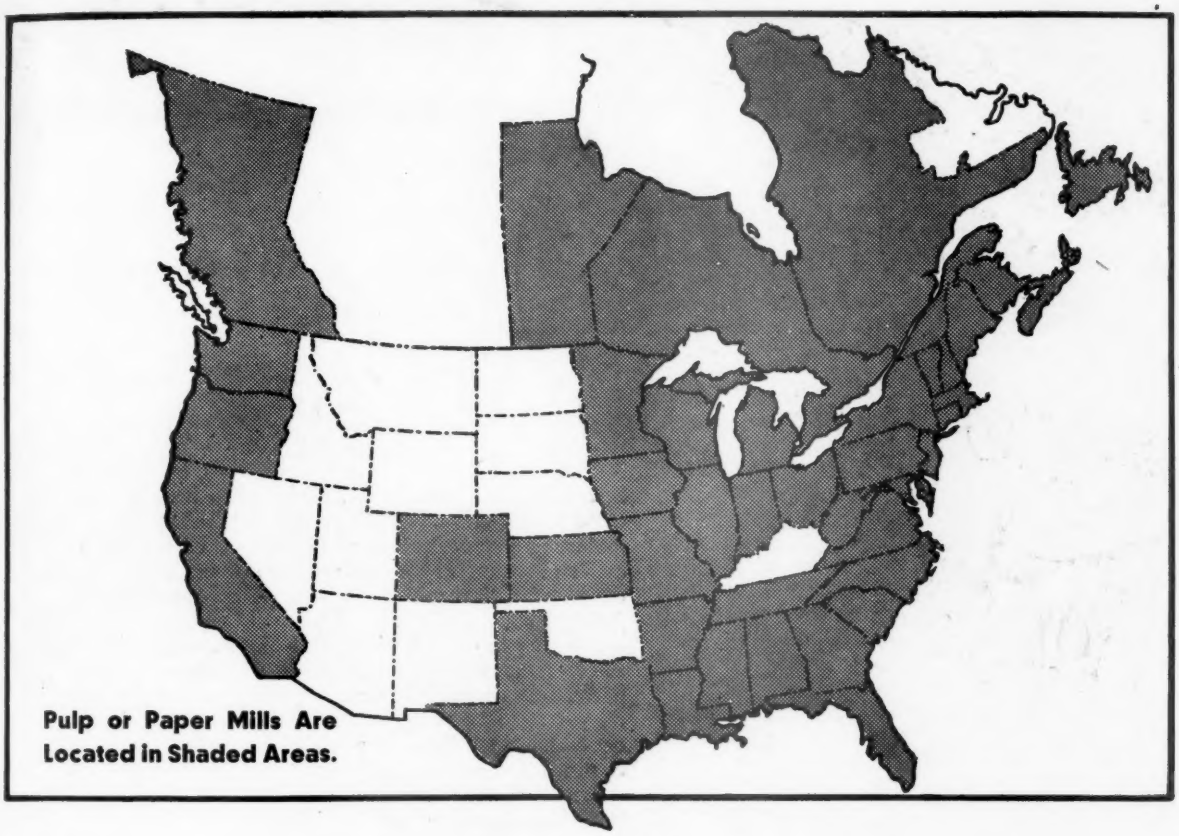
**PENNSYLVANIA SALT MFG. CO. OF WASHINGTON**
**TACOMA, WASHINGTON**

**PENNSYLVANIA SALT**
MANUFACTURING COMPANY
*Chemicals*



Pacific Pulp & Paper Industry is published once a month, at 71 Columbia St., Seattle, Wash. Subscription: U. S. and Canada, $4.00; other countries, $5.00
Entered as second class matter May 20, 1927, at the Postoffice at Seattle, under the Act of March 3, 1879.


17 20/49 12



Pulp or Paper Mills Are Located in Shaded Areas.

# Wherever there's a pulp or paper mill— Stebbins Linings and Tanks are favorably known

From Newfoundland to California – from British Columbia to Florida—wherever there's a pulp or paper mill on the North American continent, Stebbins linings and tanks stand first in the esteem of the most experienced men in the pulp and paper industries. In a large majority of the pulp and paper mills one or more vessels are equipped with Stebbins linings and in many plants Stebbins linings are used exclusively. Over 90% of all the sulphite digesters in the country are Stebbins lined, and in countless accumulators, acid towers, acid recovery tanks, acid storage tanks, bleaching tanks, blow pits, chests, washer vats, etc., Stebbins materials and mastercraftsmanship play a most important part in assuring long life and efficient, economical, trouble-free service.

If you are not already a user of Stebbins linings it will pay you to talk your lining problems over with one of our engineers. Over 50 years experience in the pulp and paper field renders us exceptionally well equipped to serve you.

SEMCO

## Stebbins Engineering Corporation

TEXTILE TOWER SEATTLE, WASHINGTON

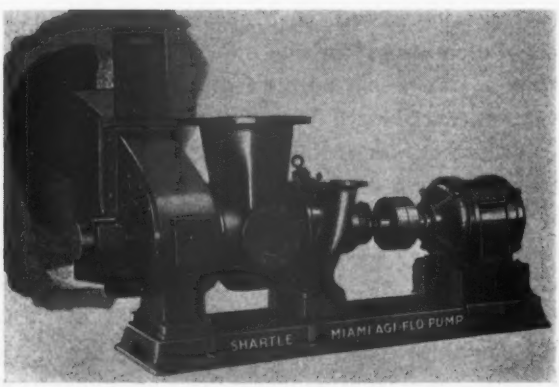
# a Half Mile Deep

## What a Tribute to Modern Engineering!

It was a glorious day for Dr. Beebe when he broke the world record with a sensational descent 3028 feet below the ocean surface. But . . . and Beebe will be the first to admit it . . . much of the credit goes to other men . . . those engineers, designers, and scientists who spent months preparing for the descent.

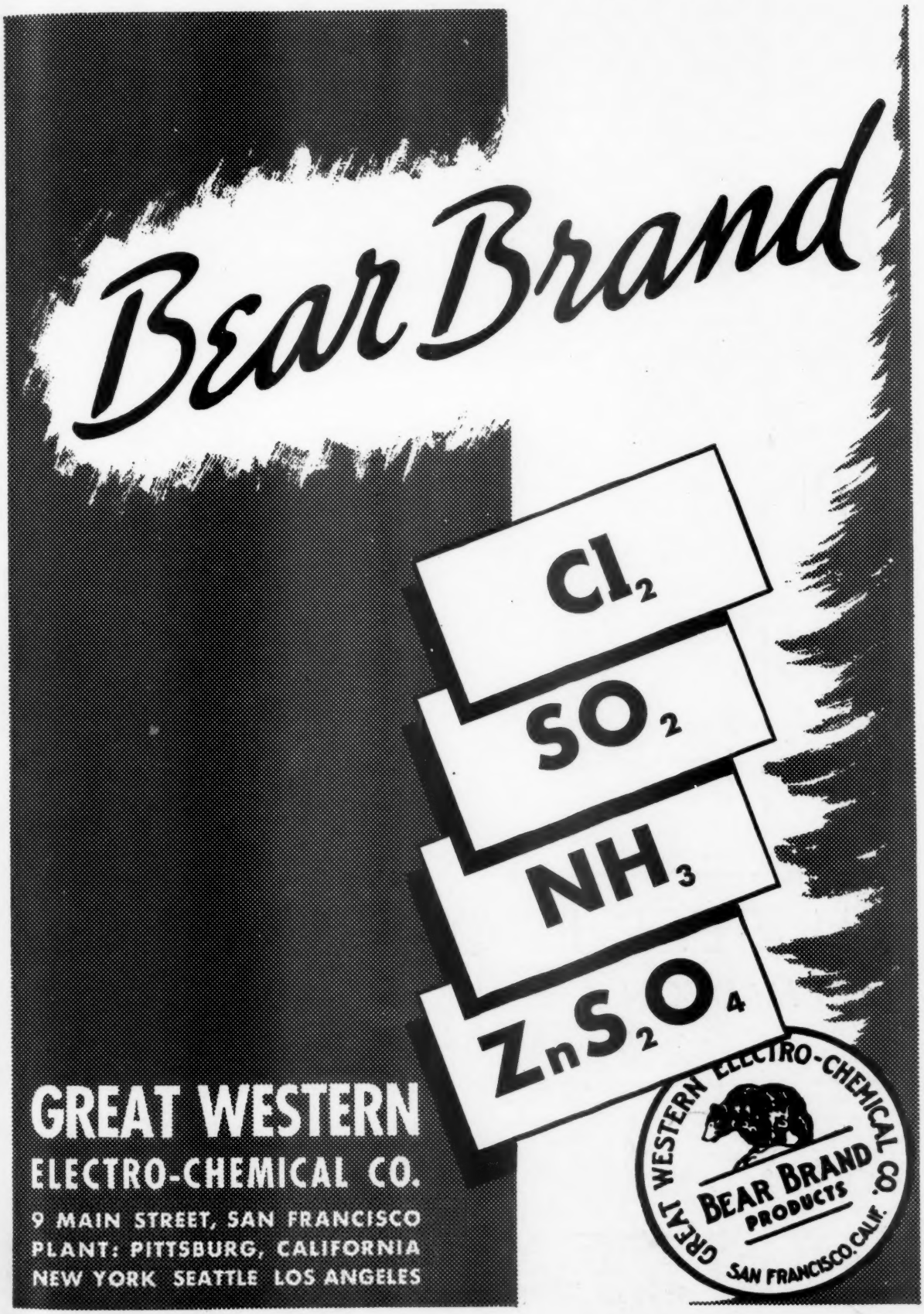
This reminds us of Black-Clawson-Shartle paper mill machinery. When one sees it breaking all kinds of economy and performance records in scores of mills, one often forgets the years of work that preceded its construction. Performance of this B-C-S machinery is all-important to you, of course, but credit must be given to scientific engineering.

Are you familiar with the many improvements developed in the last year by Black-Clawson and Shartle? You can learn about them, without obligation, by calling in one of our representatives. A few minutes spent talking with him might lead to important savings. Why not do it today? The Black-Clawson Co., Hamilton, Ohio. Owners of Shartle Brothers, Middletown, Ohio.




Miami Agi-Flo Pump . . . thorough chest agitation . . . no stratifying . . . uniform volume. All with one motor on less power.

BLACK-CLAWSON SHARTLE BROS.


Bear Brand
$Cl_2$
$SO_2$
$NH_3$
$ZnS_2O_4$
GREAT WESTERN
ELECTRO-CHEMICAL CO.
9 MAIN STREET, SAN FRANCISCO
PLANT: PITTSBURG, CALIFORNIA
NEW YORK SEATTLE LOS ANGELES
GREAT WESTERN ELECTRO-CHEMICAL CO.
BEAR BRAND
PRODUCTS
SAN FRANCISCO, CALIF.

SELLING AGENTS

# for WOOD PULP and PAPER

BULKLEY DUNTON PULP CO., Inc.

295 MADISON AVENUE NEW YORK, N. Y.

CABLE ADDRESS: BULKTON

Pacific PULP & PAPER Industry

*The Journal of the Pacific Coast Industry*

FEBRUARY • 1939

Vol. 13 — No. 2

MILLER FREEMAN
President

LAWRENCE K. SMITH
Manager

HARLAN SCOTT
Editor

JOHN E. BROWN
Associate Editor

KEMPER FREEMAN
Production Manager

MILLER FREEMAN, JR.
Circulation Manager

OFFICES

Seattle

PUBLISHING OFFICE
71 Columbia St.
Tel. MAin 1626

Portland

John E. Brown
1220 S. W. Morrison St.
Tel. AT. 8890

San Francisco

Stuart F. Leete
121 Second St.
Tel. GA. 5887

Los Angeles

Calvin D. Wood
124 W. Fourth St.
Tel. MUtual 5857

Copyright, 1939, by the Consolidated Publishing Co. Contents may not be reproduced without permission.

SUBSCRIPTION RATES

| | |
|---|---|
| United States and Canada | $4.00 |
| Other Countries | $5.00 |
| Single Copies | $ .35 |
| Review Number | $1.00 |

# Canada Acts Swiftly To Protect Own Pulp Industry

When American-Canadian Reciprocal Trade Agreement eliminated duties on wood pulp and European producers offered pulp to Canadian mills at prices suspected of being below cost

● In striking contrast to the situation in the United States the Canadian government has recently taken action to protect the Dominion's important wood pulp industry from uneconomical prices set by European producers. As a result of the American-Canadian Reciprocal Trade Agreement and the decline of foreign currencies in relation to the American and Canadian dollars, Canadian pulp producers felt for the first time the full force of foreign competition in their own market.

Included in the recently renewed and revised Trade Agreement signed between the United States and Canada was an apparently innocuous clause removing the duties on wood pulp exported from the United States into Canada. As the movement of pulp is almost entirely from Canada into the United States the removal appeared to be little more than a gesture of good will. However, it threatened to be disastrous to Canadian pulp producers selling in their own market, for removal of duties on pulp imports also applied to European nations through Canada's most-favored-nation treaties.

Neither the producers of wood pulp in Canada nor the Canadian government waited for the situation to develop and throw Canadians out of work as has happened in the United States.

Immediately upon the American-Canadian Trade Agreement becoming effective on January 1st, 1939, representatives of the Canadian Pulp & Paper Association conferred with the Canadian Minister of National Revenue regarding immediate action to protect the Canadian pulp industry against dumping of pulp by European countries enjoying advantages of depreciated currencies, low labor costs and subsidies of other types. North American producers cannot compete against these artificial advantages.

Canadian agents are now investigating foreign values in Scandinavian countries, and when their reports are made and studied the Minister of National Revenue will establish values for foreign pulp imports.

**● Meanwhile, Canadian customs collectors have been instructed to advise importers that all pulp imports subsequent to January 1st, 1939, are subject to amendment. This means an anti-dumping tax if values are lower than those to be established for imports by Canadian government.**

This served to effectively protect the Canadian pulp market while the investigation was being carried on by warning foreign producers that price cutting would be to their own disadvantage.

The Canadian government's instant interest in protecting the employment of Canadians is a clear cut example of the kind of cooperation between government and business that keeps the people at work and maintains business enterprise on a profitable level.

More taxes are paid by people at work and by businesses operating profitably, and since the Federal government of the United States is interested in tax revenues at present, officials in Washington could profit by adopting the Canadian system.

The attitude of the Canadian government toward the problems of Canadian employes of business and its willingness and ability to act quickly in their defense when their livelihood is jeopardized is in direct contrast with the situation in the United States. In Canada, when Canadians complain of an unfair import situation the government is

apparently sympathetic and interested in remedying the injustice if such it is. Temporary protection is assured while the investigation is being made. The government assumes that its own citizens are pleading a just cause and endeavors to get to the heart of the problem and find a permanent solution.

● But in the United States when an industry or group of industries request assistance, even if it is no more than enforcement of the anti-dumping laws which certain officials have sworn to enforce, their government eyes them with suspicion and insists that they prove their complaint in minute detail and without governmental assistance before the government will act. There seems to be an official attitude in Washington that American business has an ulterior motive in asking protection against subsidized foreign competition, protection for which it pays in taxes but so often does not get.

The pulp industry of the United States is heading swiftly back to the chaos of 1931, 1932 and 1933 before the American dollar was devalued. Once again employes of the American pulp industry are out of work because of the fluctuation of foreign exchange which further reduces what is left of our tariff barriers against the products of low wage countries. (As there is no duty on wood pulp the industry is the first to feel the maximum adverse effect of currency depreciation.)

The effect of depreciated currency is first to lower prices, then lower volume by taking business out of the country that rightfully belongs to Americans, and lastly to reduce wages and American living standards in a desperate effort to compete. The starving effects of the declining foreign currencies upon the employes of American industry are not as yet visible to the nation as a whole, but the process is under way and must be stopped before the situation of 1932 returns.

Again we say that the employment of Americans in producing goods for their own market at a price which permits the payment of good wages and salaries to maintain a high standard of living, is not a partisan problem. It is an American problem.

What should the present administration in Washington do about it? One very effective method has been pointed out by the intelligent, sympathetic and quick acting Canadian government at Ottawa.

# Paper Base Stocks and Manufactures Lead All Commodity Imports

● Imports of paper base stocks and manufactures led all other commodity classes in 1937 and 1938 as will be noted from the table appearing below which was prepared by The National City Bank of New York and published in its February bulletin.

These figures are of vital interest to every pulp manufacturer and paper manufacturer in the United States; important to the former for they show how well the imports were maintained during 1938 in proportion to other commodity imports while domestic production of wood pulp declined more than did imports; and, important to paper manufacturers because they show how largely dependent American paper mills are upon foreign sources which are subject to being cutoff in time of war.

They should also show forcefully to paper manufacturers that wood pulp prices are controlled by foreign pulp producers and are subject to the vagaries of foreign exchange.

These two facts are of major influence in creating instability in the price of paper.

**Value of United States Imports**
**Leading Classes and Commodities**
**(In Millions of Dollars)**

| | Three Mos. End. Dec. | | Twelve Mos. End. Dec. | |
|---|---|---|---|---|
| | 1937 | 1938 | 1937 | 1938 |
| Rubber, crude | $ 68 | $ 36 | $ 248 | $ 130 |
| Silk, raw | 24 | 28 | 107 | 89 |
| Wool, raw | 9 | 10 | 96 | 23 |
| Sugar | 20 | 16 | 166 | 130 |
| Coffee | 35 | 36 | 151 | 138 |
| Cocoa | 6 | 3 | 52 | 20 |
| Veg. oils and seeds | 29 | 22 | 175 | 93 |
| Grains and preparations | 4 | 3 | 102 | 8 |
| **PAPER BASE STOCKS AND MFRS.** | **66** | **56** | **255** | **199** |
| Cotton, wool, jute and flax mfrs. | 33 | 25 | 162 | 101 |
| Tin | 28 | 13 | 104 | 45 |
| Chemicals, petroleum, etc. | 36 | 33 | 147 | 118 |
| All other | 285 | 235 | 1,245 | 856 |
| Total | $643 | $516 | $3,010 | $1,950 |

## Richvale Rice Straw Mill Scheduled to Start in March

● California will shortly have its first rice straw pulp mill in operation, according to present plans of the Pacific Coast Pulp & Paper Company, Richvale.

Alfred M. Thomsen, engineer for the project, states that the buildings are erected, most of the machinery installed, and that making of pulp from rice straw should start shortly after March 15.

The method of making pulp by Thomsen's method from rice straw is patented by him, it is said, and involves cooking the straw with sodium sulphide. He states that this is an entirely different process than is usually used, and tends to conserve the straw fiber. There is also involved a process of regenerating the solution, which will make it most economical.

The plant, which is near Chico, will have a capacity of about five tons of pulp per day, made from 15 tons of rice straw. Tributary to the plant is a rice acreage that will produce 150,000 tons of straw yearly, Thomsen states.

The company plans on sending its pulp East for manufacture into tissue paper, but Mr. Thomsen hopes some time to have a tissue paper mill in conjunction with the pulp mill.

He states that rice straw pulp is admirably suited for making thin papers in general, but that he makes no claim that the pulp is suited for making cigarette paper, as was claimed in newspaper stories.

The company was formed originally some 11 years ago, but never got beyond the first building stage. It was kept alive by the stockholders and in 1938 Mr. Thomsen was retained by the company as engineer.

The president of the Pacific Coast Pulp & Paper Company is D. M. Thomson of Richvale, California. The other directors are all rice growers in the vicinity of Richvale.

In a written statement to PACIFIC PULP & PAPER INDUSTRY, Alfred M. Thomsen said in part:

● "Since the daily press took up this matter as something of local interest

many misstatements have appeared for which we are in no wise responsible.

"The company is not a 'cooperative' in the legal sense of the word, but it is true that it is being financed by the rice growers in order that they may commercialize their straw. The capacity of the present plant is but 5,000 tons of straw per annum, not 40,000 tons as I have seen it stated. It is true that the plant is EXPECTED to grow to such capacity and even larger, and it is being built on a unit basis with such an expansion program in view. At the present writing, however, we have but a plant processing 15 tons of straw daily.

"That the pulp is admirably suited for making cigarette paper is another error. It may be true, that time alone will tell, but we certainly make no such claim. It is admirably suited for making thin papers in general and as such will find its proper niche when we are ready to put it on the market. The economic importance of the development, and its influence on rice culture is another matter. Here we do not hesitate to say that it will be profound.

"Tributary to the plant is a rice acreage that will produce 150,000 tons of straw annually. The pulp is an excellent article and the cost promises to be such that a respectable price can be paid to the grower, thus adding materially to the value of the crop."

## Oregon Pulp and Paper Makes Improvements

● The Oregon Pulp & Paper Company has recently installed circulating systems on five digesters in the Salem, Oregon, mill. One such system was previously installed on the sixth digester. The additional systems make the plant 100 per cent on this type of cooking. All were built by the Electric Steel Foundry Company and are equipped with Bingham pumps made by the Bingham Pump Company of Portland.

The systems are equipped with indirect heaters, and with automatic control that operates in case of leakage of acid into the condensate returning to the boilers.

Another mill improvement was the installation of a Grewin system on one paper machine which was completed in December by the J. O. Ross Engineering Corporation. This proved so satisfactory, according to Nils G. Teren, vice president and manager, that a similar installation was ordered for the big bond machine. This went into operation on February 6.

## Stork Busy At Longview

● The stork has been very busy recently delivering babies to men of the Pulp Division, Weyerhaeuser Timber Company, at Longview.

Bud Johnson, assistant engineer, became the father of a boy on December 18. The young Bud was welcomed by three sisters.

Don Felthous of the engineering department, gained a new son on January 14, and Les Nelson's first born, a boy, arrived on January 22.

Don Felthous is also among those in the mill who have recently completed new homes. C. E. Yelton, head pipe fitter, has finished his house, and Louis Bailey, chief electrician, is building one. It is understood that George Wolf, master mechanic, is contemplating one for the near future.

# Swedish Pulp to Benefit From Lower Water Rate

**Reported reduction in water freight rate from Swedish Baltic ports to Montreal and lake ports will give Swedish pulp mills an additional advantage over American pulp mills**

● In addition to the advantage they are now enjoying through depreciation of the Swedish kronor in terms of the dollar as pointed out in the January number, the Swedish wood pulp producers will benefit further at the expense of American pulp mill after April 1st by a reduction in water freight rates.

From a reliable source PACIFIC PULP & PAPER INDUSTRY learns that the Swedish Baltic Conference of steamship lines is offering contracts for the shipping season from April 1st to September 30th, 1939, at $4.00 per long ton on wood pulp shipped to Montreal and/or Sorel for delivery at ports on the Great Lakes. It is understood that rates from Montreal to points on the Great Lakes have been proportionately reduced.

This $4.00 rate represents a 60 cents per long ton reduction from the rate of $4.60 per long ton in effect during the 1938 shipping season.

As American pulp is shipped on a short ton basis the lowness of the Swedish trans-Atlantic rates are better shown if reduced to that basis. The $4.60 per long ton rate in effect last year was equivalent to a rate of $4.11. per short ton. The rate of $4.00 per long ton for the 1939 shipping season is equivalent to $3.57 per short ton from Swedish Baltic ports to Montreal.

As the new rate is definitely stated to be payable in United States funds it is obviously that the reduction is intended to take full advantage of the depreciation of the kronor in terms of the American dollar and to the disadvantage of the American pulp producers.

Swedish operators of shipping lines are thus aiding their customers in obtaining a still greater price advantage in the United States pulp market, but at the same time they are not taking the full 60 cents per ton reduction due to the dollar-kronor exchange rate. In terms of the kronor the rate was actually reduced 35 cents instead of 60 cents.

In April of 1938 when the water rate to Montreal was $4.60 per long ton the Swedish kronor was worth $.2560 or $4.60 equalled 17.97 kronor. At the present time (February 10th, 1939) the kronor is worth $.2417 or $4.00 (the new rate per long ton) equals 16.54 kronor. The decline in return to the Swedish Baltic Conference lines is 1.43 kronor or the equivalent at the present exchange of $.3456.

● This freight rate situation is another example showing how badly the American pulp industry is affected by the fluctuations of foreign exchange against which it has no protection whatever.

## Erickson To Make Eastern Trip

● E. W. Erickson, resident manager of the Port Townsend mill of the National Paper Products Co., is leaving on a trip to the East, during which he will visit the Institute of Paper Chemistry at Appleton, Wisconsin, about the end of February.

## Crown Zellerbach Men Make Eastern Trips

● A. B. Lowenstein, vice-president of Crown Zellerbach Corporation, J. E. Hanney, resident manager of the corporation's Camas mill, and H. E. Ostenson, paper mill superintendent at Camas, all visited the National Paper Products Company's mill at Carthage, New York, in February.

Albert Bankus, vice-president, left around the middle of February to attend the annual meeting of TAPPI in New York City, February 20-24th. Mr. Bankus is a member of the Executive Committee.

W. R. Barber, technical director for Crown Zellerbach, left Camas February 13th to attend the TAPPI meeting. Mr. Barber stopped off at Carthage, New York, and on his return trip will spend several days at the Institute of Paper Chemistry at Appleton, Wisconsin, arriving back in Camas about March 10th.

## Pilot Bleach Plant Installed at Longview

● The Pulp Division of the Weyerhaeuser Timber Company at Longview is installing a pilot bleach plant for experimental work. The unit is of 25-lb. capacity, and is located in the digester building.

# New Type Paper Milk Bottle Introduced in Oakland

Developed by Claude Pope of the Fernwood Creamery, the new container shows the cream line and utilizes standard bottle filling equipment

● Promising further utilization of paper as an economical and safe container for milk, the first Pope paper milk bottle unit went into action at the Fernwood Creamery, Oakland, California, this month.

Claude E. Pope, Oakland dairyman, and inventor has been working on the machine for some time. The paper milk bottles which he is introducing to Oakland housewives this month are made of pure bleached sulphite board of .027 thickness for the quart size; .017 for pints and half pints, and .030 for the gallon size.

Pope's container is four sided, tapering at the top. The bottles will be shipped flat to the bottling plant, thus eliminating storage space. They come in three parts, top, bottom, and the sides all in one piece.

The bottles are laid flat in the magazine of the forming machine, and are picked up and squeezed open by mechanical fingers, after they are opened a heated plunger presses the bottom on each bottle at 200 pounds pressure. For 20 seconds the bottles with the heat and pressure applied to the bottom travel around the machine. By this time they are firmly glued on, and completely sealed with paraffine.

With the bottom on, the bottle is then passed (in a reversed position) through a scalding paraffine bath of 180 degrees. Water of 26 degrees is then sprayed on them to cool them off and harden the paraffine.

● Next the bottles pass to the filling machine, which is a standard dairy milk bottle filler.

After the bottles are filled, they are capped in much the same way the bottoms were put on—a square cap, under pressure is pressed on the bottle with a heated plunger. The heat makes the wax gummy and forms a perfect seal.

Pope's bottles are transparent enough so that water can be seen in the bottles, and hence the objection of housewives that they could not see the cream line in milk is done away with.

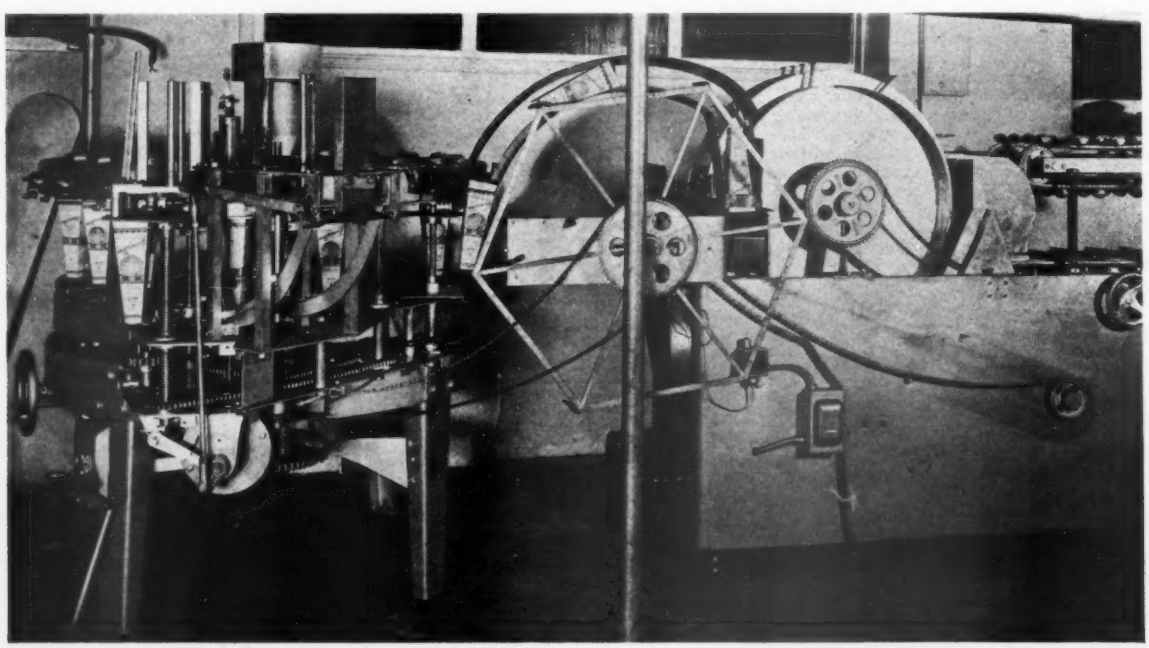
Mr. Pope plans on manufacturing his machine in quantity and putting it on the market shortly.

## Pacific Straw Paper Installs Egg Carton Machines

● The Pacific Straw Paper & Board Company has installed a new "two by six" egg carton machine. This is the first two by six unit in the Longview plant, the other machines being for cartons with three by four compartments. The company has Pacific Coast rights to the new machine under the patents.

## Mrs. Norwood Dies From Auto Injuries

● Mrs. M. E. Norwood, wife of M. E. Norwood, paper mill superintendent for the Columbia River Paper Mills, Vancouver, Washington, died February 8th from injuries received in an automobile accident the evening before between Portland and Vancouver. She was driving alone at the time.



**THE POPE PAPER MILK BOTTLE MACHINE operating in the Fernwood Creamery in Oakland, California ' ' ' At the right the bottles are being formed and the bottoms pressed on ' ' ' In the center bottles are being conveyed into the paraffine bath at 180 degrees Fahrenheit.**

### Schaub Recovering From Recent Illness

● Charles Schaub, president of the Pacific Straw Paper & Board Co., has been ill in Longview since early in January. He was able to leave the hospital after a few days and has been convalescing at home.

Arthur Zimmerman, general manager, also was on the sick list recently, being in bed for a couple of weeks around Christmas with a bad throat. He is now fully recovered and back on the job.

### Supply Company Installing Consistency Controllers

● One of the C-E consistency controllers, handled by the Pacific Coast Supply Co., was installed early in February on No. 3 machine in the Everett Pulp & Paper Co. plant.

In addition to two at the Longview Fibre Co., controllers have also been shipped to Washington Pulp & Paper Co. at Port Angeles, and to the Crown Willamette mills at Camas, Wash., and Lebanon, Ore.

### Howard Simons Visits Coast

● Howard A. Simons, pulp and paper mill engineer of Chicago, spent several days in the Pacific Northwest the latter part of January while on a vacation trip.

Mr. Simons is a son of the late V. D. Simons who designed and supervised construction of a number of Pacific Northwest pulp and paper mills. On several of these construction jobs Howard Simons served as resident engineer.

**The POPE PAPER BOTTLE which was introduced by an Oakland dairy this month.**

# Crown Zellerbach to Build Large Laboratory at Camas

New building will be center of all research activities and headquarters for the technical control section—Experimental pulping unit now completed

● Construction will shortly start on a new laboratory building in Camas, Wash., for the central technical department of the Crown Zellerbach Corporation. It will house the personnel and activities of the technical control section, and will be the research center for all of the Crown Zellerbaih operations. Wm. R. Barber, technical director for the corporation, will be in charge of the new unit.

The new building will provide ample facilities for the expanding work of the research department and for the increasing personnel. Accommodations will be provided for at least 18 men, including those working with the new experimental pulping unit.

It will be located on plant property along N. E. Sixth avenue, covering an area 120 by 44 feet, and of attractive brick construction. From the central main entrance, a hallway will divide the building into two wings containing all necessary offices and laboratories.

There will be a general research laboratory, 23 by 27 feet; a biological research laboratory 15 by 32 feet; a waxing paper laboratory 21 by 31 feet and office; a fine instrument room, photographic dark room, director's office, assistant director's office, library, file room, humidity room, and cold room.

The new laboratory building is expected to be one of the finest for this purpose in the paper industry when completed. Details of the structure are being prepared by the central engineering department of the company at Port Angeles.

● In addition to the recent authorization of the new research laboratory for the Crown Zellerbach Corporation at Camas, the company has completed construction of a new experimental pulping unit, located in the bleach plant building.

This represents the latest in small scale pulp mills, all built of stainless steel, and arranged for cooks under any desired condition.

It consists essentially of a 30-lb. stainless steel digester made by the Electric Steel Foundry Company, a circulating system for direct or indirect circulating methods, pressure tank, chlorinator, bleach tank, two-plate flat screen and stock tanks.

### Woodfibre Mill Resumes Operations

● B. C. Pulp & Paper Company's mill at Woodfibre, which was shut down late in December after several months of operation on special orders, was re-opened this month and will continue running for a month or so, according to President Lawrence Killam.

Just how long the mill will be on a producing basis will depend entirely on the business offering, Mr. Killam says. It will be recalled that early last spring when Woodfibre mill was re-opened after several months' shutdown it was expected that a few weeks' running would account for all the orders, but new business came in and kept the plant going until midwinter. B. C. Pulp officials are not making any forecasts; in fact, they are keeping their fingers crossed, but it is hoped that continued operation will be justified by developments this spring.

The Port Alice plant has been down for more than a year as a result of the collapse of the Oriental market, but it is ready to swing into production again at short notice and Mr. Killam expects that improved market conditions this year may warrant re-opening.

Both the Woodfibre and Port Alice mills, which in the past have been largely dependent on Oriental business, were converted for the manufacture of bleached sulphite pulp for rayon and high grade papers shortly before the Sino-Japanese trouble blew out the market, and the plants have not yet had a chance to show what they can do under the new setup.

The orders on which the Woodfibre mill will work this month are not from the Orient.

### Anacortes Paper Products Installing Former Riverside Machine

● The Anacortes Paper Products Company, which was recently formed at Anacortes, Washington, to manufacture roofing and board products, is now installing a 47-inch, three-cylinder board machine which trims 42 inches.

The machine came from the dismantled plant of the Riverside Paper Company which was constructed several years ago but never operated. The Riverside plant was located just outside the city of Tacoma on the Seattle-Tacoma highway.

Machinery installation is proceding at Anacortes but no definite date has been set for the start of production.

# Technical Men Discuss Pulp and Paper Schools

## And Professor Kobe presents data on "Specific Heats and Boiling Temperatures of Sulfate and Soda Black Liquors"

● "Tonight the tables are being turned," said TAPPI Chairman N. W. Coster as he introduced the speakers for the fourth of the series of TAPPI dinner meetings, "we have two technical men talking on school problems and one professor talking about technical problems."

The professor who spoke on technical problems at the meeting held on the evening of February 7th at the College of Puget Sound in Tacoma, Washington, was Dr. Kenneth A. Kobe of the Department of Chemical Engineering at the University of Washington.

Dr. Kobe gave the title of the paper prepared by himself and Arvin J. Sorenson, "Specific Heats and Boiling Temperatures of Sulfate and Soda Black Liquors," and told the gathering of 76 men that he was not reading it as the subject would be better understood by reading the paper in the February issue of PACIFIC PULP AND PAPER INDUSTRY.

He remarked that this paper was prepared as a result of their search for the specific heats and boiling temperatures of sulfate and soda black liquors. Being unable to find the data in published literature, the Department of Chemical Engineering decided to determine them as a contribution of fundamental research to the pulp and paper industry.

Dr. Kobe cited this paper as an example of the type of research work for which the University of Washington was well equipped and especially interested in performing for the industry. He urged the technical men to call upon the Department of Chemical Engineering for research of this nature whenever a fundamental problem arose that was not adequately covered in the published literature.

The two technical men who spoke on school problems were, W. R. Barber, technical director of the Crown Zellerbach Corporation, who spoke on "Paper Schools — Their Organization and Conduct; and G. H. McGregor, superintendent of the Longview mill, Pulp Division, Weyerhaeuser Timber Company, who spoke on "Vocational Education for Pulp and Paper Mills."

● Both talks are published in full in this number. In introducing Mr. Barber and Mr. McGregor, Chairman Coster remarked that the Technical Association was intensely interested in educational work, both the training of men prior to entering the industry and training after they became associated with the industry. He said that the National TAPPI organization was working on the problem in an effort to determine the best methods of imparting the knowledge helpful to the mill organizations and to the individuals.

He complimented the school at Camas and the vocational school at Longview for teaching fundamentals of the industry's manufacturing operations.

Following the papers there was an extended and lively discussion which centered upon the value of students obtaining practical training along with the school work. The question was asked, "Why doesn't the pulp and paper industry cooperate with the chemical, engineering and forestry schools in providing practical manufacturing experience while the students are going to school?" Examples of industries doing this were cited, the petroleum industry in particular. One answer was that the individual units in the pulp and paper industry were not large enough to embark upon a student training program, but in the main the question remained unanswered and open for further discussion at another meeting. The value of the combination school and practical training was not questioned, the divergence of opinion being upon the methods of working it out.

The speakers were asked a number of questions about the schools at Camas and at Longview which showed a deep interest in the problem of better training the men in the industry.

Among the guests of TAPPI at the dinner were Professor F. A. McMillan of the College of Puget Sound who had invited TAPPI to hold a dinner meeting at the college; and Professor B. L. Grondal of the College of Forestry, University of Washington in Seattle.

Chairman Coster thanked Professor McMillan for his invitation and said that TAPPI was glad to come to the College of Puget Sound. He also thanked vice-chairman William T. Webster, superintendent of the St. Regis Kraft Company of Tacoma, who had arranged the program for the Tacoma meeting.

The following men attended the Tacoma Dinner Meeting on February 7th:

● **Jerry Alcorn,** Pulp Division, Weyerhaeuser Timber Co., Everett; **W. R. Barber,** Crown Willamette Paper Co., Division Crown Zellerbach Corp., Camas; **John H. Baker,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **Iver S. Belsvig,** St. Regis Kraft Co., Tacoma; **Emil Berger,** St. Regis Kraft Co., Tacoma; **Richard S. Buckley,** Pulp Division, Weyerhaeuser Timber Co., Everett; **A. M. Cadigan,** St. Regis Kraft Co., Tacoma.

**Harold D. Cavin,** Consulting Engineer, Seattle; **R. E. Chase,** R. E. Chase & Co., Tacoma; **R. E. Chase, Jr.,** R. E. Chase & Co., Tacoma; **Kenneth Chapman,** Pulp Division, Weyerhaeuser Timber Co., Everett; **Sidney M. Collier,** Puget Sound Pulp & Timber Co., Bellingham.

**N. W. Coster,** Soundview Pulp Co., Everett; **H. N. Evans,** St. Regis Kraft Co., Tacoma; **J. D. Fraser,** Pulp Division, Weyerhaeuser Timber Co., Everett; **Hary Fromong,** Hawley Pulp & Paper Co., Oregon City; **N. O. Galteland,** St. Regis Kraft Co., Tacoma; **Irving R. Gard,** Merrick Scale Mfg. Co., Seattle; **B. R. Gardner,** Pennsylvania Salt Mfg. Co. of Washington, Seattle; **A. A. Garrett,** St. Regis Kraft Co., Tacoma.

**Gordon M Gay,** St. Regis Kraft Co., Tacoma; **A. S. Gerry,** Pulp Division, Weyerhaeuser Timber Co., Everett; **William R. Gibson,** Northwest Filter Co., Seattle; **W. W. Griffith,** St. Regis Kraft Co., Tacoma; **Bror L. Grondal,** College of Forestry, University of Washington, Seattle; **Kenneth B. Hall,** Improved Paper Machinery Co. and Noble & Wood Machine Co., Portland; **L. C. Haffner,**

●

## March Dinner Meeting In Seattle, March 7th

**Due to a conflict with the graduation dinner of the Camas Paper School, the March 7th Dinner Meeting of the Pacific Section of TAPPI will be held at the WASHINGTON ATHLETIC CLUB in SEATTLE. Time is 6:30 p. m.**

**The April 4th Dinner Meeting, originally scheduled for Seattle, will be held in Camas, Washington.**

**On March 7th in Seattle, A. R. HERON, Director of Industrial Relations of the Crown Zellerbach Corporation, will give a talk. The other speaker will be GORDON ANDERSON of Gladding, McBean & Company, who will offer a paper on the use of refractories in the pulp and paper industry.**

**RESERVATIONS should be sent to DOUGLAS C. MORRIS, 417 Ninth Avenue South, Seattle, who is in charge of arrangements for the March 7th dinner.**

Portland; **S. H. Harrison,** Westinghouse Electric & Mfg. Co., Seattle.

• **H. R. Heuer,** Pulp Division, Weyerhaeuser Timber Co., Longview; **W. S. Hodges,** Felts and Wires, Portland; **Albert H. Hooker, Jr.,** Hooker Electrochemical Co., Tacoma; **George W. Houk,** Hooker Electrochemical Co., Tacoma; B. L. Kerns, Westinghouse Electric & Mfg. Co., Seattle; **Frank G. Keuss,** St. Regis Kraft Co., Tacoma; **John O. Kjome,** Scientific Supplies Co., Seattle; **K. A. Kobe,** Dept. of Chemical Engineering, University of Washington, Seattle; **George H. Krueger,** Seattle.

**Robert M. Kuhn,** St. Regis Kraft Co., Tacoma; **R. E. LeRiche,** Control Equipment Co., Seattle; **Henry W. Loren,** Westinghouse Electric & Mfg. Co., Tacoma; **Robert W. Martig,** Control Equipment Co., Portland; **D. K. MacBain,** Pulp Division, Weyerhaeuesr Timber Co., Longview.

**G. H. McGregor,** Pulp Division, Weyerhaeuser Timber Co., Longview; **F. A. McMillin,** College of Puget Sound, Tacoma; **R. S. Niccolls,** Columbia Steel Co., Seattle; **Fred Nicholson,** Stetson-Ross Machine Co., Seattle; **W. M. Osborne,** Hooker Electrochemical Co., Tacoma; **Frederic M. Pape,** Willson & George Meyer & Co., Seattle; **Peter Parent,** Rayonier Incorporated, Tacoma Division, Tacoma; **J. W. Peckham,** The Bristol Co., Seattle.

**Paul A. Pittinger,** Pulp Division, Weyerhaeuser Timber Co., Everett; **Oliver E. Ronken,** Soundview Pulp Co., Everett; A. J. Rosengarth, Hooker Electrochemical Co., Tacoma; **Don L. Ross,** Tacoma; **B. W. Sawyer,** Foxboro Co., Portland; **George E. Schmidt,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **Harlan Scott,** Pacific Pulp & Paper Industry, Seattle; **J. E. Shackelton,** Columbia Steel Co., Seattle.

• **Brian Shera,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **John R. Smith,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **Lawrence K. Smith,** Pacific Pulp & Paper Industry, Seattle; **Arvin J. Sorenson,** Columbia Powder Co., Tacoma; **Stanley E. Sorenson, Pulp Division,** Weyerhaeuser Timber Co., Everett; **P. E. Sullivan,** Ingersoll Rand Co., Seattle; **Richard D. Tripple,** St. Regis Kraft Co., Tacoma.

**Cecil Triplett,** Hawley Pulp & Paper Co., Oregon City; **H. A. Vernet,** Kelley Clarke Co., Portland; **J. W. Ward,** Hooker Electrochemical Co., Tacoma; **Harold F. Warren,** R. E. Chase & Co., Tacoma; **Storrs W. Waterman, Jr.,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **L. H. Wear,** Taylor Instrument Companies, Portland.

**Wm. T. Webster,** St. Regis Kraft Co., Tacoma; **L. H. Wendt,** Pulp Division, Weyerhaeuser Timber Co., Everett; **John M. Wilcox,** St. Regis Kraft Co., Tacoma; **Edward P. Wood,** Pulp Division, Weyerhaeuser Timber Co., Longview; **L. R. Wood,** Rayonier Incoroprated, Grays Harbor Division, Hoquiam.

## Wertheimer On Trip

• After making several starts on a trip to the east, R. A. Wertheimer of the Longview Fibre Co. left January 27 for an extended trip into the middle west and east.

# Two Coast Mills to Begin Sanitary Napkin Production

**Pacific Coast Paper Mills of Bellingham and its affiliated company, Westminster Paper Mills of New Westminster, B. C., to start production of "Sewdette" type late in February**

• Toward the end of February both the Pacific Coast Paper Mills of Bellingham and its affiliated organization, the Westminster Paper Company of New Westminster, B. C., will complete the installation of machinery and start the first production of sanitary napkins on the Pacific Coast.

The napkins will bear the name of "Sewdettes," a copyrighted brand name applied to the product produced by the Joa method. The equipment now being installed in both mills was developed by the Curt G. Joa Company of Sheboygan Falls, Wisconsin.

The filling for "Sewdettes" is pure rayon pulp, shredded and fluffed into a batting. The entire manufacturing operation is automatic from the time the rayon pulp is fed from rolls into the shredder to the finished napkin.

At Bellingham the napkin manufacturing operation will be entirely separate from the Pacific Coast Paper Mills' main plant. It will be housed in a warehouse nearby leased from the adjacent Puget Sound Pulp & Timber Company. The Westminster Paper Mills will house their napkin department in their own building, a new converting plant which will be finished this month.

Each of the two plants will be capable of producing 72,000 "Sewdettes" in eight hours or 41 great gross per day or approximately 12,000 great gross per year.

• According to Paul J. Herb, vice-president, it is estimated that the annual consumption of sanitary napkins in the eleven western states, the marketing area of the Pacific Coast Paper Mills, amounts to 112,733 great gross per year valued at around $2,000,000. To begin with the Bellingham plant will produce but one-tenth of the total consumed in its trading area.

Distribution of "Sewdettes" will be through the regular jobbing channels. Upon their introduction the Pacific Coast Paper Mills will embark upon an advertising campaign prepared by Botsford, Constantine & Gardner, advertising agency of Seattle. This will be coordinated with the national advertising program of the Curt G. Joa Company, manufacturers of the equipment.

The Pacific Coast Paper Mills enjoyed a good year in 1938 with the mill operating at capacity. Their well advertised brand of toilet tissue, "M.D.," increased in sales 49 per cent over 1937. It has been on the market for seven years and each year has witnessed an increase in sales. The paper mill at Bellingham, which manufactures paper napkins in addition to toilet tissue, has been maintained in excellent operating condition.

J. J. Herb, who recently celebrated fifty years in the paper industry, is president and general manager of the Pacific Coast Paper Mills and is president of the Westminster Paper Company. His son, Paul J. Herb, vice-president, is in charge of the Bellingham mill where P. J. Onkels is superintendent. Another son, Elmer M. Herb, is vice-president and general manager of the New Westminster plant and Ray C. Onkels is superintendent.

Both mills have maintained capacity operations during the first month of 1939.

## Hannys Celebrate 25th Wedding Anniversary

• J. E. Hanny, Camas mill manager for the Crown Willamette Paper Co. division of the Crown-Zellerbach Corporation, celebrated his 25th wedding anniversary on February 2. A group of his friends in the mill gave Mr. and Mrs. Hanny a surprise party, and presented them with a handsome silver flower dish.

## Kelly on California Trip

• W. Norman Kelly, manager of the Longview mill Pulp Division, Weyerhaeuser Timber Company, left February 3rd for a trip of several weeks in Southern California.

# Specific Heats and Boiling Temperatures Of Sulfate and Soda Black Liquors

by KENNETH A. KOBE and ARVIN J. SORENSON*

IN the sulfate and soda processes for pulping wood, an important unit operation is the evaporation of the dilute black liquor to such a concentration of solids that it can be burned in an alkali recovery furnace. Fundamental data for the design and testing of such evaporator units have been lacking. In this paper are reported the specific heats of sulfate and soda liquors having various concentration of solids, and the boiling points of various sulfate black liquors.

The sulfate black liquor from the pulping of Western hemlock was kindly supplied by the St. Regis Kraft Company and the soda black liquor from the pulping of cottonwood and Douglas fir by the Everett Pulp and Paper Company.

### Apparatus and Method

● The apparatus used in this work was the one previously used for the specific heat of sulfite waste liquor[1]. The apparatus and technique are described in greater detail in other articles[2,3]. The heat input into a weighed sample of black liquor was measured over each 10° rise in the temperature range 25° to 95° C. Allowing for the heat equivalent, the specific heat of the black liquor was calculated from the heat input.

Specific heats were determined for four different concentrations of solids in each black liquor. Solids were determined by evaporating to constant weight at 105° C.

### Specific Heats

● The specific heats for sulfate and soda black liquor are given in Table I.

● It is seen that the specific heats vary but slightly with temperature, so that specific heat is a function of solids content only. The average values for both sulfate and soda liquors are plotted in Figure I. It is seen that both sulfate and soda liquor give the same specific heat line as a function of solids content. The equation of this line has been calculated.

$$C = 0.98 - 0.0052\,S$$

where C = mean specific heat, cal/gram or Btu/lb.

S = per cent solids.

It may be concluded that neither the variety of wood used nor the kind of alkaline pulping process has an appreciable effect on the specific heat of the black liquor.

### Boiling Temperatures

● For evaporator design it is necessary to know the temperature of the black liquor being evaporated in each effect of the multiple effect evaporator. In this work the effect of pressure and concentration upon the boiling temperature of black liquor was determined. This was carried out on the sulfate black liquor only, but it is believed from the earlier results that the results also may be used for soda black liquor.

A 500 cc. Claisen flask was connected to a bulb condenser for reflux under a constant reduced pressure. Temperatures were measured by one thermomenter in the boiling liquor and another in the vapors above the surface. Boiling temperatures at reduced pressures were determined on three different concentrations of liquor. Foaming was encountered below 35 per cent solids, but was broken up by the two-necked Claisen flask. No foaming occured with the liquor containing 63 per cent solids.

The results are shown in Figure II. To give straight lines the logarithm of the vapor presure is plotted against the reciprocal of the absolute temperature, but the scale numbers are vapor pressure in millimeters of mercury and temperature in degrees Centigrade.

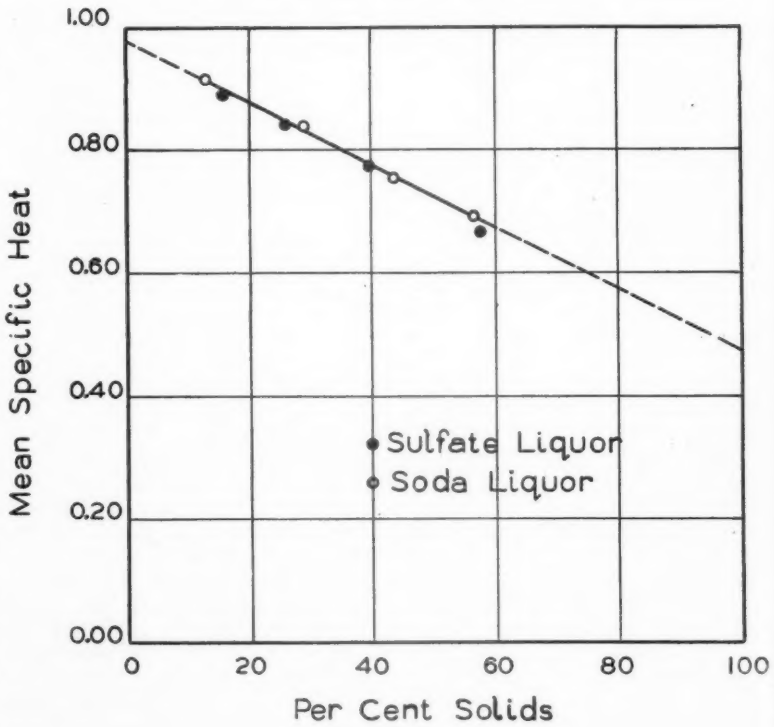



**FIGURE I**

**Mean specific heat of sulfate and soda black liquors**

*Department of Chemical Engineering, University of Washington, Seattle. Presented at the Dinner Meeting sponsored by the Pacific Section of TAPPI, Tacoma, Washington, February 7th, 1939.

## Table I

**Specific Heats of Soda and Sulfate Black Liquors**
**Temperatures in degrees Centigrade**
**Specific heat in cal/gram, or Btu/pound**

**Sulfate Black Liquor**

| Pct. Solids | Temperature range 25-35 | 35-45 | 45-55 | 55-65 | 65-75 | 75-85 | 85-95 | Ave. |
|---|---|---|---|---|---|---|---|---|
| 12.8 | 0.911 | 0.913 | 0.934 | 0.932 | 0.907 | 0.906 | 0.893 | 0.911 |
| 29.0 | 0.829 | 0.834 | 0.842 | 0.828 | 0.837 | 0.835 | 0.837 | 0.835 |
| 43.8 | 0.753 | 0.758 | 0.755 | 0.752 | 0.759 | 0.758 | 0.755 | 0.756 |
| 56.6 | 0.689 | 0.703 | 0.683 | 0.691 | 0.720 | 0.691 | 0.674 | 0.691 |

**Soda Black Liquor**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 15.7 | 0.882 | 0.887 | 0.884 | 0.888 | 0.876 | 0.890 | 0.885 | 0.887 |
| 26.0 | 0.841 | 0.840 | 0.841 | 0.844 | 0.840 | 0.844 | 0.838 | 0.840 |
| 39.8 | 0.775 | 0.768 | 0.773 | 0.773 | 0.779 | 0.784 | 0.776 | 0.775 |
| 57.6 | ------- | 0.662 | 0.665 | 0.667 | 0.663 | 0.668 | 0.671 | 0.666 |

The vapor presure line for pure water has also been placed in the figure. The temperature of the vapor above the boiling liquor was that corresponding to boiling water at the same temperature. This difference in temperature was about 12° at the maximum concentration of 63 per cent solids. In Figure II the temperatures shown are for the boiling liquor and not the vapor above it.

From this figure complete information about vapor pressure, boiling temperatures and concentrations can be obtained. By interpolation, vapor pressure lines can be constructed for any concentration liquor. The concentration of liquor in the evaporator at any time may be determined from the temperature of the liquor and pressure in the evaporator, the concentration can be easily interpolated from the chart.

### Summary


● 1. In Figure I is given the relationship for specific heat-per cent solids for sulfate and soda black liquors, both of which give the same line.

● 2. In Figure II is given the relationship for vapor pressure-boiling liquor temperature for sulfate black liquor. Knowing any two from boiling temperature, pressure above liquor, or concentration of solids, the third may be determined.


### Literature Cited


[1] Kobe and McCleave, Paper Trade J. 106, No. 1, 35 (1938).

[2] Kobe and Anderson, J. Phys. Chem. 40, 429-34 (1936).

[3] Kobe and Sheehy, Ind. Eng. Chem., to appear.


## Ten Camas Men Get 20-Year Pins

● On the evening of January 26th, a banquet was held at Crown Willamette Inn, Camas, where 20-year pins were presented to 10 employees of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, by Albert Bankus, vice president. Prior to the banquet, a meeting of supervisors was addressed on personnel problems by A. R. Heron, director of industrial relations.

Those receiving service pins were: S. D. Dorwan, Martin Devlin, J. H. Clark, Arthur Hannaford, E. W. Haley, F. L. Lee, William Linder, Mrs. Mary Pierce, William Shadel and Marta Smith.

## Some B. C. Logs Going to Japan

● British Colulmbia is still shipping logs to Japan, although not on an important scale. Some hemlock logs have been shipped in recent months that would normally have gone to the province's own pulp and paper mills, but owing to reduced operations of these mills the domestic market for hemlock has been greatly curtailed.

Although reports have recently gained circulation that logs are being cut on Japanese timber holdings at the north end of Vancouver Island and shipped direct to Japan on Japanese ships, Vancouver operators claim that this is not so; that all the Japanese log buying has been done in the open market—a much cheaper proceeding in view of prevailing prices than a venture into logging on their own ground would be.

## Camas Paper School To Hold Two-Day Graduation

● The present term of the Crown Willamette paper school at Camas will be concluded on February 22nd. Over 200 paper students will receive diplomas, the largest number ever to do so in the history of the school.

Because of the large number of students, two graduation banquets will be held at Crown Willamette Inn this year. First year students will receive their diplomas on March 8, while the other three classes will banquet on March 9.

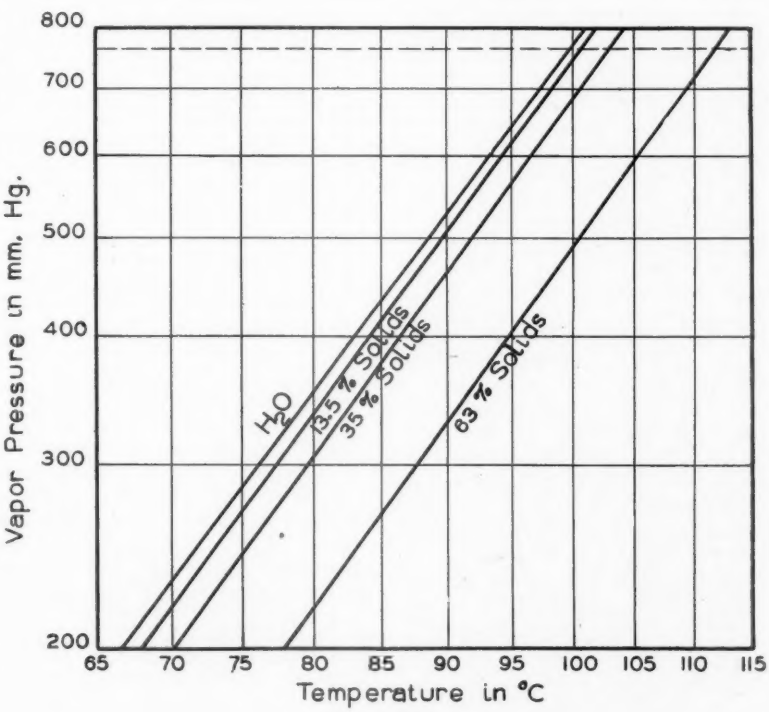



**FIGURE II**

**Vapor pressure-Temperature Relationships for Sulfate Black Liquor of various Concentrations**

# Paper Schools — Their Organization and Conduct

by W. R. BARBER*

THE kind of paper schools under discussion here this evening is not a recent idea to be sure, although we are not well enough informed to state except for a couple instances where and when all the paper schools in this country have been attemtped, or are being currently conducted. It does appear to be the case, from the number of inquiries we have received regarding the Camas Mill paper school, that it at least has the recognition of an outstanding success for such an enterprise.

Let us define "paper school" as a voluntary effort on the part of pulp and paper mill employees to extend their knowledge of the industry they work in, under some system of study and instruction conducted concurrently with their jobs. This definition is only half what it should be, in that we should include: voluntarily provided and supported by the employer. There are paper schools, however, conducted and supported by employe organization alone, in which the employer interest takes no active part. To our mind, a paper school effort which is not founded and conducted as a joint employe-employer enterprise, the latter providing the incentive, the leadership and the financial support necessary to make it a success, is hardly worthy of being called a paper school. The sentiment that pulp and paper mill employees of all grades and classes are bettered for the effort, that a more intimate knowledge of a man for his pulp or paper mill job, or a broader knowledge of the working relation of his own job to his mill as a whole, are eventually as an objective reflected in the overall efficiency of the mill, this sentiment is not a universally accepted opinion. Camas Mill of Crown Zellerbach Corporation has had no regret for having adopted the affirmative, positive view of an accrued benefit after six consecutive years of paper school experience.

There seem to be two schools of thought in the matter of organization and conduct of paper schools. One of them has proved eminently successful; the other can only have proved of mediocre, if any, influence in betterment of the pulp and paper industry.

One of these is the one-term course of instruction in the general phases of pulp and paper making, with or without the participation of the employer in the enterprise, and where the method of an instructor appointed because of his qualification of a college education, a technical one, and using for study assignments some existing book or books on pulp and paper is followed.

On the one hand, a few of the more ambitious employees of the mill band together, provide their own textbooks and pay a qualified instructor, of their own mill personnel or otherwise, to give the lectures and conduct the school in a formal manner.

On the other hand, a group of the employers take advantage of local, state or provincial governmental educational extension cooperation, where the governmental agency provides the lectures and necessary books for a fee.

In another case the management of the mill sees fit to encourage the instruction of a few selected employees along the lines of their own work in the mill, choosing those judged as the more intelligent and ambitiously worthy of encouragement for promotion. This case has merit, of course, in that it does present to the employee evidence of the management's good will in placing the opportunity for self-betterment before him, particularly a betterment along his own line of work. It has the demerit, however, of quite likely disappointing the management in realizing his own only reward for his effort, namely, evidence of better mutual understanding and espirit-de-corps in his organization. Our opinion is that paper schools conducted by this system of the selected few, will find difficulty in maintaining interest, and, above all maintaining year-after-year continuity. Personnel eligible for the school course soon becomes exhausted; men who have completed the course, the selected few, and feel themselves thereby the more outstandingly competent in their own lines of work, are apt to harbor a grievance from consequent inattention to their promotion. Where promotion is not forthcoming he becomes an object lession of the futility of trying to get ahead. The selected few system, while admirable in giving the chosen employee a better knowledge of the underlying principles in the theory and practice of his own job, leaves him, about where he was before as regards his sense of coordination of the mill organization and operations as kept going by his fellow workers as a whole body. Furthermore, emphasis upon a few individuals does not tend to promote sympathetic employe-management relations because it tends to a feeling of inequality of opportunity. After all, it is hard to judge how far a frog can jump until it is given an invitation to jump farther than it realized it could jump; the mill management, or whomever appointed to select the prospective paper school students is apt to make some sad misjudgment as to individual latent capability.

**W. R. BARBER,**
**Technical Director**
**Crown Zellerbach Corporation**

*Technical Director, Crown Zellerbach Corporation, Camas, Washington. Presented at the Dinner Meeting held by the Pacific Section of TAPPI at Tacoma, Washington, on February 7th, 1939.

● The other school of thought on paper schools adopts the principle that the large and lasting benefit can come only from an effort which lifts the entire employee body upward into an increased knowledge and understanding of pulp and paper manufacture and its associated problems of administration; not lifted so high as a selected few might be, but essentially according to the democratic principle that it is better for a whole people to become wiser than for the few. It is the paper school thought of the more liberal conception of giving all employees without exception the opportunity of broadening their knowledge of their industry in all its parts, especially as carried on in the mill where they are working, and thus allowing each one to identify his own part in the entire flow of operations. In speaking of "without exception," one does not draw a line across the mill employee personnel and say that the positions of responsibility, the manager, the assistant managers, the department heads, the department superintendents and foremen, are to be excluded. For where can one sensibly draw such a line and say that those on this upper side of responsibility in mill operations need learn no more about pulp and paper, while those on that lower side only can profit by it? An executive, a superintendent, a foreman, is presumed to be a leader of his men as well as their boss.

There is no place where leadership can be more aptly put to good effect, nay, where qualities of leadership can be improved, than in being a participant in the instruction of subordinates. Thus the executives, the superintendents and the foremen of the mill become the logical instructors, the school faculty staff. The average mill employee has a great deal more respect, in fact a respectful admiration for his own department head or immediate boss who is cheerfully willing to act as his classroom instructor in paper school and pass on to him the fruits of his years of experience regardless of his lack of a trained pedagogic ability, in the sympathetic and understanding manner not possible of a formal instructor to whom he is related only by attendance at paper school. This school of thought frankly recognizes that the paper school is not a trade school, not a professional technical school, not a college; nor that it expects its "graduates" to become trained mechanical and chemical engineers in pulp and paper. It frankly recognizes the various degrees of schooling and intellectual capacity naturally to be encountered among a large group of pulp and paper mill workers from those whose formal schooling might have been very little to those who hold college degrees. Scholastic ratings in the paper school must therefore fairly deal with evidence of substance of knowledge gained by the student, and not with the appearance of it through a better ability to spell and write perfect English. Neither does it encourage any certainty of promotion, nor any promotion at all as based on having "graduated" from the paper school course.

The executives, superintendents and foremen who accept the responsibility of instructors soon encounter the adage that "one does not learn until one has to teach." Things in pulp and paper making commonplace in their years of experience, they find, need oftimes the first real thought they have ever given them in order to explain the whys and wherefores intelligently. Students ask questions, many questions, not only in their classes but out in the mill—and a foreman who is an instructor in paper school can hardly dodge the issue in answering and still retain respect as a foreman. Thus the tables become turned, in a way. At the same time that the foremen in their capacity as supervisors are delivering their authority downward, there becomes also the force of paper school student insistence upon knowledge delivered upwards to them which can not do else but make better foremen of themselves.

Thus, according to this second conception has been the organization and conduct of the paper school of the Camas Mill of Crown Zellerbach Corporation. It began as a hopeful idea the fall of 1933; the current session just ending marks its sixth consecutive year. The paper school activity has become an integral part of mill policy and management expectation. The many graduates of its four-year courses of instruction are proud of their diplomas as accomplishments in their own right rather than viewing them as urgencies to promotion. As their reward for sixteen weeks of extra work the administrators of the school have the personal satisfaction of contributing something to the mill organization beyond the immediate requirements of their own jobs. As a reward for the serious matter of preparing and delivering an understandable and instructive lecture, besides the supplementary matter of explaining processes in operation and patiently answering innumerable questions, the foreman and his assistants have the knowledge that their jobs are being made more easily efficient because of the more intelligent interest of their men.

The opportunity for registration is unrestricted; to women employees as well as to men. Several women have in fact been graduated from the Camas Mill paper school. Liberal financial support, providing the needed facilities of meeting halls,

●

**"Let us define "Paper School" as a voluntary effort on the part of pulp and paper mill employees to extend their knowledge of the industry they work in, under some system of study and instruction conducted concurrently with their jobs.**

**"This definition is only half what it should be, in that we should include; voluntarily provided and supported by the employer. . . . To our mind, a paper school effort which is not founded and conducted as a joint employee-employer enterprise, the latter providing the incentive, the leadership and the financial support necessary to make it a success, is hardly worthy of being called a paper school."**

**"There seems to be two schools of thought in the matter of organization and conduct of paper schools. One of them has proved eminently successful; the other can only have proved of mediocre, if any, influence in betterment of the pulp and paper making industry.**

**"One of these is the one-term course of instruction in the general phases of pulp and paper making, with or without the participation of the employer in the enterprise, and where the method of an instructor appointed because of his qualification of a college education, a technical one, and using for study assignments some existing book or books on pulp and paper is followed. . . .**

**"In another case the management of the mill sees fit to encourage the instruction of a few selected employees . . . Our opinion is that paper schools conducted by this system of the selected few, will find difficulty in maintaining interest, and, above all, supporting year-after-year continuity. . . . Furthermore, emphasis upon a few individuals does not tend to promote sympathetic employee-management relations because it tends to a feeling of inequality of opportunity."**

**"The other school of thought on paper schools adopts the principle that the large and lasting benefits can come only from an effort which lifts the entire employee body upward into an increased knowledge of understanding of pulp and paper manufacture and its associated problems of administration; not lifted so high as a selected few might be, but essentially according to the democratic principle that it is better for a whole people to become wiser than for the few."**

textbook material, projection equipment, moving picture equipment, and a host of incidental costs, is made an annual paper school budget of its own. No charges whatever are placed upon the student. When he leaves, his bound volume of lectures assembled from the knowledge and experiences of men of years in pulp and paper is his own to keep.

● It would be according to precedent to say that the beginning in 1933 was "humble," but this was not the case. Registration in the first course of that year was 185. It would be commendable perhaps to them to say that those in charge of paper school administration have by untiring effort restrained a flagging interest of the mill employees in paper school. This, too, has not been the case. On the contrary the administrators of the school have been busy keeping up with the increasing demands of student interest. About three-fourths of those completing the course that year wanted to know, "Where do we go from here?" So the thought came; these graduates have been given a general instruction in pulp and paper and the associated activities (such as purchasing, personnel, management, accounting and handling of mill orders), why not now give them some of the bedrock details of the Camas Mill operations itself? So a Second Year Course came into being, specialized as to how and by what equipment, wood preparation, water supply, pulps manufacture, stock treatment, paper machine operation, and technical control were carried on at Camas Mill, an important part of which instruction was the visiting of a particular operation in small groups under a competent instructor-guide subsequent to the weekly lecture thereon. Those of us in charge of the paper school administration had thought this would be the end of expansion. But some 25 of the Second Year graduates of 1934 thought otherwise. Again, what next?

Well, we couldn't expect foremen to give up all their evenings lecturing to paper school, so we said, we will put you on your own resources. We will give you mill passes so that you may go into the mill at any time, day or night, and you are to spend 64 hours total or 4 hours weekly in independent study of the mill's mechanical and chemical processes of pulp and paper making. Once every two weeks we will meet with you for presentation of some specialized instruction and you will have to pass a stiff examination, both oral and written, to find out what you have learned on your own hook. Subsequently these Third Year students became Fourth Year —a two-year graduate course, covering thus on their own initiative the mill's operations. There we stopped! It has become a real mark of distinction to have completed the full four-year course and receive the special diploma therefor, because the Third and Fourth Year courses are not made easy by any means.

● What does it mean to him to have completed four years of arduous extra effort? He is a more intelligent person. He has learned to express himself better in speech and in writing. He is possessed of a greater self-confidence that he can and does do his own particular job in a better, more intelligent manner. He has a greater respect for the responsibilities carried by his boss. He has learned how his own operation is affected by other operations within the flow diagram of his own job. He has learned the importance of the eternal vigilance of guarding quality of product and cost of product all along the line, because quality means sales and sales mean jobs. He becomes less wasteful, more careful with equipment and materials. He has had finally the opportunity to observe his own aptitudes; perhaps he is a natural born acid-maker instead of a beaterman; he is no longer provincial, no longer a foreigner in knowledge and discussion of other mill operations with his fellow workers. In many cases he is helped to promotion he would not otherwise have had.

As now standardized, administration of Camas Mill Paper School comprises:

| | |
|---|---|
| Board of regents | 4 |
| Dean | 1 |
| Principal | 1 |
| Vice Principal | 1 |
| Registrar and Secretary | 1 |
| Assistant Registrar | 1 |
| Professors (1, each course) | 4 |
| Advisory Faculty Board | 4 |
| Lecture Group | 55 |
| Mill Istructors | 15-20 |
| Property Man—3 assistants | 1 |
| Lecture set-ups, movie experts, projection work. | |

90 to 100 men are required to run the school.

Records of registration for the six years show the following:

| | First Year Course | Second Year Course | Third Year Course | Fourth Year Course |
|---|---|---|---|---|
| 1933 | 185 | .... | .... | .... |
| 1934 | 116 | 60 | .... | .... |
| 1935 | 92 | 35 | 41 | .... |
| 1936 | 111 | 45 | 24 | 19 |
| 1937 | 124 | 50 | 17 | 20 |
| 1938 | 141 | 69 | 34 | 19 |
| | 769 | 259 | 116 | 58 |
| Total Number Graduates | 378 | 191 | 96 | 48 |
| Per Cent of Registration | 49% | 71% | 83% | 84% |

The Camas Mill Paper School has been very fortunate in the cooperative helpfulness accorded by visiting lecturers from neighboring pulp and paper mills, as well as from industrial plants associated with the pulp and paper industry. Particularly in the Third and Fourth Year courses, advantage is taken of the specialized knowledge in the engineering and processes of related industries, lectures given by representatives of companies manufacturing pulp and paper equipment. These lectures are logically adaptable to the Third and Fourth Year courses because by that time the student has become capable of absorbing in an intelligent manner some of the more difficult theoretical and practical principles of mechanics, chemistry, and industrial processing.

Evaluation of results after six years of experience denotes the two basic elements that have made for the successful Camas Mill paper school enterprise to be: First, opportunity of universal employee participation; second, that the foremen of the mill being naturally men of years of intimate experience know their subject because of that long experience and can deliver a lecture upon it in a more instructive, convincing and interest-holding manner than someone who may have a thorough knowledge of theory and practice of the operation but is not associated with the student himself in the daily task of its responsibility.

What kind of a paper school should others consider establishing? The one which after study of their own particular or peculiar situation seems to be the best. The Camas Mill has of course been fortunate in having a multiplicity of pulp and paper making and paper converting operations to provide an unusually broad field for study. Again a large employee reservoir is available to draw upon for year-after-year continuity. Some mills manufacture only pulp, some manufacture only paper, others manufacture both pulp and paper. A pulp mill school should, we think, be aimed first toward developing knowledge of its own product and processes. Excursion also into what becomes of the mill's pulps in the making of papers could well be extended even though the paper making operation itself was not present for viewing. The same principles of conduct should apply in reverse manner to a mill making only paper. As for student body number, size of the school as measured in registration has no essential meaning; the number of students participating from the employee body of the mill will naturally follow the size of the mill. Equality of opportunity and democracy of instruction are the prime principles for success, we believe.

●

**"There is no place where leadership can be more aptly put to good effect, nay, where qualities of leadership can be improved, than in being a participant in the instruction of subordinates."**

**". . . The executives, superintendents and foremen who accept the responsibility of instructors soon encounter the adage that 'One does not learn until one has to teach.'"**
**"What does it mean to him to have completed four years of arduous extra effort? He is a more intelligent person. He has learned to express himself better in speech and writing. He is possessed of a greater self-confidence that he can and does do his own particular job in a better and more intelligent manner. He has a greater respect for the responsibilities carried by his boss. He has learned how his own operation is affected by other operations within the flow diagram of his own job.**

**"He has learned the importance of the eternal vigilance of guarding quality of product and cost of product all along the line, because quality means sales and sales means jobs. He has become less wasteful, more careful with equipment and materials. He has had, finally, the opportunity to observe his own aptitudes; perhaps he is a natural born acid maker instead of a beaterman; he is no longer provincial, no longer a foreigner in knowledge and discussion of other mill operations with his fellow workers. In many cases he is helped to promotion he would not otherwise have had."**
**"Evaluation of results after six years of experience denotes the two basic elements which have made for the successful Camas Paper School enterprise, to be: First, opportunity of universal employee participation; Second, that the foremen of the mill, being naturally men of years of intimate experience, know their subjects because of that long experience and can deliver a lecture upon it in a more instructive, convincing and interest-holding manner than someone who may have a thorough knowledge of theory and practice of the operation but is not associated with the student himself in the daily task of its responsibility."**

# Vocational Education For Pulp and Paper Mills

by G. H. McGREGOR*

VOCATIONAL education in various industries in this country is not new. Vocational training is probably the oldest method of individual education. Procedures and funds have been set up whereby courses in vocational education may be established in practically every city and state.

In 1917 the Smith-Hughes Federal Law was enacted which serves to provide funds and set up details of organization for vocational education. Under this law, one-half of the teacher's salary is reimbursible to any given city or district.

In addition, there are other funds available, dependent upon the number of pupils and the number of class periods attended. This amounts to approximately 15c per pupil per class period attended. Also, there is the usual registration fee, which in the case of most courses, is quite nominal; usually $2.50 to $5.00.

Thus we see that sufficient funds are available to completely handle trade courses which might be set up without the necessity of increasing the budgets of local school boards. It has been the experience of those districts in which vocational courses have been set up that additional taxes for this purpose have been nil.

In setting up an organization for vocational education, we find two branches: executive and advisory divisions. The executive organization is set up as follows:

U. S. Commissioner of Education
State Board of Vocational Education
State Supervisor
Local School Board
Local School Superintendent
Vocational Supervisor
Instructor
Student

Under the advisory division of the organization, we find the following:

Federal Advisory Committee for Vocational Education
Federal Apprenticeship Commission
State Vocational Advisory Committee
State Apprenticeship Commission
City Advisory Board
Trade Committee

Thus we see that a complete organization has been provided so that if any city or district finds it advisable to set up vocational education courses it is merely necessary for the local school board and superintendent to apply to the state supervisor for vocational education, who, upon making the proper survey, will submit recommendations as to what could be done to provide instruction on the subjects investigated.

There are numerous divisions of vocational education other than that which we as pulp or paper men are directly interested in, such as, day trades, general continuation or commonly classified as business courses, trade extension work, apprenticeship training, etc.

Thus in a given district the usual procedure is for the local school board to appoint a city advisory board. This advisory board works in conjunction with the local vocational advisory committee, the function of both being to determine whether or not there is an actual need for training in any one or more lines of endeavor. Often times it is quite easy to work through trade unions or even directly with industries in that locality.

● If, for instance, it is found that there is a need and desire for vocational training in pulp and paper in a given community, a trade committee would be appointed consisting of representatives of the management and labor for the industry in question and they would determine to what extent vocational training should be carried out. They would also advise regarding instructors and type of courses to be given.

The subject of vocational education has been receiving considerable attention from state executives and state legislature. In our own state at the present time, we have two or three bills up for consideration before the state legislature. One is a bill which would tie in the functions of a Junior College with that of vocational education. Another is the Senate bill No. 76 which is based on recommendations of the state planning committee for vocational education after an extensive survey of this subject in this and other states.

In so far as vocational education for pulp and paper mills is concerned, we find that there are three methods whereby employees may study to obtain greater knowledge of their work. One is the setting up of courses which are completely supervised and controlled from the mill in question. The second is by taking correspondence courses. The third method is to set up courses in conjunction with vocational education divisions of the local school system.

There are advantages and disadvantages in each of these methods mentioned. Insofar as courses set up by a mill are concerned, we may find that the problem is quite simplified in that instruction comes from within the mill, time for given courses can be established to suit the convenience of the employee and a certain amount of observance of the employees who take these courses can be maintained by supervisors in the mill.

On the other hand, facilities in

**G. H. McGREGOR, Superintendent, Longview Mill Pulp Division, Weyerhaeuser Timber Company**

*Superintendent, Longview Mill, Pulp Division, Weyerhaeuser Timber Company, Longview, Washington. Presented at the Dinner Meeting held by the Pacific Section of TAPPI at Tacoma, Washington, on February 7th, 1939.

**"Courses in vocational education may be established in practically every city in all states without additional cost to taxpayers through existing methods of procedure and with the aid of funds provided by Federal and state governments. . . .**

**"If any city or district finds it advisable to furnish vocational courses, it is merely necessary to apply to the state supervisor for vocational education, who, upon making the proper survey, will submit recommendations to the local board as to what could be done to provide instruction on the subjects investigated."**

the mill are probably not as broad as they could be and also it may not be desirable to have employees take too prominent a part in vocational education in the presence of their fellow workers who might desire not to do so, but who, at the same time, might feel that they are being discriminated against in favor of that individual who might take all courses available.

In the matter of correspondence courses, the employee can get precisely what he desires. He or she can work at any time convenient to himself. On the other hand, in this case very little outside help is available. The cost in a good many instances is such that the individual does not care to assume the burden.

We also have both advantages and disadvantages present when setting up courses in conjunction with vocational education departments of the local school. In this latter case, courses are established only after it has been determined that there is a need and desire for them. Courses of instruction are supervised both by representatives of the employees and management and by the heads of the local school system. When cooperation is fully assured among these groups, a complete and efficient system should be the result. By this procedure, a broader selection of instructors can be made. Also, facilities for presentation of courses should be fully adequate.

Probably the one disadvantage to this method is the matter of deciding upon a time for holding classes. In a number of instances it is usually necessary to duplicate lectures to take care of shift workers.

The arrangement for vocational education in Longview, which is available to the employees of the Pulp Division, Weyerhaeuser Timber Company, The Longview Fibre Company and the Pacific Straw Paper and Board Company, is patterned after the last procedure mentioned above.

● The local advisory committee, in conjunction with the local vocational supervisor, has appointed a trade committee representing employees and managements of these three mills. This trade committee meets regularly throughout the year for discussion of programs to be followed. During the past three years in Longview, there has been given as a foundation, a survey course in pulp and paper manufacture, which takes in the following subjects:

Wood
Sulphite Pulping
Kraft and Soda Pulping
Other Pulps
Pulp Screening
Pulp Refining
Paper Loading, Sizing and Dyeing
Paper Machines
Paper Fnishing, Converting and Coating
Pulp and Paper Testing
Steam
Electricity
Hydraulics
Pumps
Valves and Piping

Such an outline seems quite formidable but as anticipated above it is a survey course for the express purpose of placing before the interested parties a general picture of the extensiveness of the pulp and paper industry. It is necessary for all new students to take this first or survey course before they are eligible to take specialized courses, which, it is hoped, will be set up for each of the above subjects. Thus, both broad outline and detail will be presented.

Instruction for these courses comes from within the mills mentioned above as well as by representatives of various allied industries. Such courses can be made available to the employees of the mills at an approximate cost of $3.00. We have found that it is advisable to limit the presentation of courses to the winter months and in no case to extend the course over too lengthy a period of time.

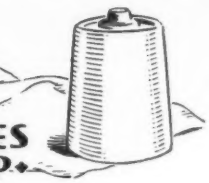
A lecture is given once a week for a time limit of two hours. One and one-half hours of these is used in lecture and the other half hour or more is used for discussion. Considerable care should be used in the presentation of subjects, especially that they be given in a clear manner, easily understandable, to the employees of the pulp or paper mill. In this case, due consideration should be given to the qualifications of instructors. Technical terms or formulas should be avoided unless they can be presented in a simplified form.

● In general, the response to these courses has been very favorable. Probably one of the greatest benefits accruing to both the men and the mill organizations from such a system of vocational education is the training in leadership acquired by foremen and supervisors who serve as instructors. Experience so far has also shown the effectiveness of employing mill foremen and supervisors as instructors, for they are able to present the material in an understandable manner because of its close relationship to their daily jobs.

●

**"During the past three years there has been offered in Longview a vocational survey course in pulp and paper making. This was organized by a local advisory committee in cooperation with the local vocational supervisor. The two jointly appointed a trade committee representing the employees and managements of the three pulp and paper mills in the city. This trade committee selects the instructors and at regular meetings throughout the year plans the courses of instruction. . . . The survey course is required of all wishing to study the subject of pulp and paper making. It is hoped specialized courses will be provided in the future as the students who have completed the preliminary courses demand advanced work."**

# Rayon and other CHEMICAL USES OF WOOD PULP



## Rayon Consumption in United States Set New Record in 1938

● The consumption of rayon (filament and staple) in the United States during 1938 set a new record of 327,000,000 pounds. The previous record consumption was in 1936, according to the Rayon Organon's Annual Rayon Statistical Survey, when 323,000,000 pounds were consumed. Consumption in 1937 was but 308,000,000 pounds.

It will be noted from the table prepared by the Rayon Organon that the consumption of staple fiber is expanding rapidly in this country with 53,000,000 pounds in 1938 against 41,000,000 pounds in 1937 and 25,000,000 pounds in 1936.

### Total Production Declined

● While consumption of rayon increased in 1938 over 1937 in the United States, production lagged, dropping to 287,749,000 pounds from 341,925,000 pounds (filament and staple combined) a decline of 54,176,000 pounds or 15.8 per cent.

The decline was entirely in the filament rayon which dropped from 321,681,000 pounds to 257,916,000 pounds, a decrease of 63,765,000 pounds or 19.8 per cent.

### Staple Fiber Production Expands

● Staple fiber continued its rapid growth during 1938 attaining a domestic production of 29,833,000 pounds against 20,244,000 pounds in 1937, almost a 50 per cent increase. The United States still lags far behind the rest of the world in the production of staple fiber producing but 3 per cent of the world total while production of filament rayon amounts to 26 per cent of the world total. Staple fiber has experienced its most rapid growth in those countries that do not possess natural fibers of their own, Japan, Germany, and Italy. It can be produced more cheaply than filament rayon and makes an excellent substitute for cotton and wool, imitating either. In addition, it possesses characteristics of its own which permits the development of fabrics having entirely different appearances from cottons and wools.

It is staple fiber's style versatility which has brought it to the front in this country more than its cheapness or its ability to substitute for cotton and wool.

In 1938 the United States imported approximately 23,500,000 pounds of staple fiber, according to the Rayon Organon's estimate. The 1937 imports were 20,610,000 pounds and in 1935 but 1,457,000 pounds. Domestic capacity has not as yet caught up with the quickening demand but expansions of staple fiber plants in 1938 will probably reduce the imports during 1939 or at least further curtail the rate of their growth.

The 1938 staple fiber imports of 23,500,000 pounds were equivalent to 11,750 short tons of dissolving wood pulp (assuming that 80 per cent of the staple fiber imported was viscose), which would be valued at the present market of $85 per ton at $1,020,000.

It is pointed out by the Rayon Organon that the decline in United States production of rayon in 1938 in the face of expanding consumption was due in part to the accumulation of heavy stocks toward the latter part of 1937. During 1938 these were absorbed while production was held down and hence the industry closed 1938 with a normal inventory.

● Another factor contributing to the reduced poundage produced by United States rayon yarn spinners in 1938 was the trend toward finer denier yarns, from 142 to 137 denier average. (Denier represents a fixed unit of weight and of length combined. In weight one denier is equivalent to .05 grams or 0.7716 grains, and in length to 450 meters or 492.13 yards. As applied to rayon, the Rayon Handbook states that there are 4,464,528 yards of a number one denier rayon yarn in one pound avoirdupois. —Ed.)

Hence the finer the denier yarns produced by a spinning plant the less the poundage produced in a given length of time, i. e. one year. In this connection the Rayon Organon states, "Because the output of a viscose yarn spinning machine is essentially directly proportional to the denier of yarn spun, it will be seen that today's increasing yarn production in the finer deniers means an increasing utilization of the industry's capacity per measured pound of yarn produced."

In other words, the United States rayon industry operated its spinning equipment at closer to capacity during 1938 than is evident from a glance at the number of pounds produced during the year.

In terms of the paper industry the rayon situation is analagous to running a 10-pound tissue on a given paper machine instead of a 70-pound book stock. If the machine operated at capacity for one year on the book stock and the next year produced nothing but tissue, still running at capacity, a tonnage produced comparison of the two years would not give a true indication of the capacity at which the machine operated the second year on tissue. Hence, the rayon industry in this country, producing a somewhat lighter weight stock in 1938 than in 1937 actually operated at a higher rate of capacity than a comparison of the pounds produced for the two years would indicate.

### World Production in 1938

● The Rayon Organon estimates that the world production of rayon and staple fiber further expanded in 1938 approaching an estimated total of one billion nine hundred million pounds, while production in 1937 was one billion eight hundred and twenty-three million pounds. It will be noted from the table that filament rayon production declined throughout the world during last year while staple fiber expanded 50 per cent, accounting for nearly half of the total world rayon production.

The United States produced 26 per cent of the filament rayon and 3 per cent of the staple fiber. Japan continued to lead all other countries with a production of around 550,000,000 pounds which represents, states the Rayon Organon, about 20 per cent of the world's filament yarn production and around 35 per cent of the staple fiber production. German and Italian staple fiber production increased materially during the year.

## Manufacturers Predict Good Year for Rayon

● Three of the top executives of the rayon yarn spinning industry are quoted in the January number of Rayon Textile Monthly as predicting that 1939 will be another good year for rayon.

In a signed statement L. A. Yerkes, manager, Rayon Department of E. I. Dupont de Nemours & Company, Incorporated, says in part, "The actual volume of rayon in the form of finished merchandise sold to the ultimate consumers was probably even greater than the 330,000,000 pounds of viscose, aceate and cuprammonium yarns and staple fiber sold to consuming mills.

"Yarn, fabric and garment stocks in the merchandising channels were undoubtedly larger at the beginning of 1938 than at the end of the year. Therefore, it is logical to believe that the consumer acceptance of rayon in 1938 was even greater than any published statistics of the industry will indicate.

"One of the outstanding successes of the year was that of staple fiber. This product alone probably reached a consumption of 55,000,000 pounds. This is almost 40 per cent above the preceding year. Published figures from abroad indicate a much greater acceptance of staple fiber than has been achieved so far in the United States. This should be the forerunner of its greater acceptance

●

**United States Rayon Consumption in Million of Pounds**

| | 1938 | 1937 | 1936 | 1935 | 1934 | 1930 |
|---|---|---|---|---|---|---|
| Rayon Filament Yarn | 274 | 267 | 298 | 253 | 195 | 118 |
| Rayon Staple Fiber | 53 | 41 | 25 | 6 | 2 | 1 |
| TOTALS | 327 | 308 | 323 | 259 | 197 | 119 |

**World Rayon Production in Millions of Pounds**

| | 1938 | 1937 | 1936 | 1935 | 1934 | 1930 |
|---|---|---|---|---|---|---|
| Rayon Filament Yarn | 975 | 1,205 | 1,021 | 940 | 772 | 451 |
| Rayon Staple Fiber | 925 | 618 | 298 | 139 | 52 | 6 |
| TOTAL | 1,900 | 1,823 | 1,319 | 1,079 | 824 | 457 |

here. The use of staple abroad has partly been forced by economic conditions but this has more quickly brought out the intrinsic merits of the fiber. While in the United States only 20 pounds of staple were used for every 100 pounds of rayon yarn, Europe produced in 1937 around 83 pounds for every 100 pounds of rayon.

"Another achievement of the rayon industry which came rapidly forward in 1938 was the production of a strong rayon for use in automobile tires. Claims for tires containing rayon cords are that such tires are safer and longer lasting. A new field for rayon was opened with this development.

"Other significant changes occurred during 1938. A further shift in the importance of the various fibers occurred. Staple took a greater share of the total volume and acetate gained while sales of viscose type yarns declined moderately. Rayon prices reached their lowest level in June with only a slight rise since then. As a result rayon is in the most favorable price position that it has ever been in. The developments of the year show that the research laboratories of the rayon industry are constantly working to make rayon suitable for new markets and more suitable for its present uses. The year has again demonstrated the constant change which occurs in textile popularity. That the rayon industry recognizes this change and keeps ahead of it is probably the outstanding reason for the present level of success."

• Quoting from the signed statement by C. McD. Carr, Vice-President of the American Enka Corporation, "The condition and prospects of the rayon market at the beginning of the new year 1939 are uqite different from the situation that existed at this time last year, when the market was weak, stocks accumulating and the price structure facing a downward revision. Beginning in the summer, there has been an increase in the consumption of all rayons with an advance in prices and at the beginning of 1939 we find the market in a much stronger position supported by a very satisfactory volume of unfilled orders on the books of the rayon producers for January and February delivery.

"A further important development has been the announcement recently of several new types of yarn which though not as yet produced on a commercial basis, will at an early date have an important influence in the future development of rayon.

"The prospects are favorable for an increase in the consumption of rayon merchandise this Spring which will undoubtedly result in the total consumption in 1939 exceeding that of 1938."

• William C. Appleton, president of the American Viscose Corporation, is quoted in part as saying:

"In the rayon producing industry stocks are at normal working levels and some items are short. A continued increased demand, which is indicated, should dispose of current production as well as the increases provided for.

"During 1938, while the country was absorbing the abnormally large purchases of the previous year, many new developments were made. New products were launched and new production appeared. Our company completed and placed in full operation a staple fiber plant, doubled the acetate yarn capacity and constructed a new viscose yarn plant.

"In addition to this new construction, the company launched a program to modernize the existing plants. This program will be effective this year and is further evidence of continued faith in rayon and its future."

## Sweden Experimenting With Wood Pulp for Acetate Rayon

• Experiments are being made under Dr. Erik Hagglund, who directs the cellulose laboratory at the Stockholm Technical University, with a process for the making of rayon from birch pulp. Up to now, birch has served as charcoal material and firewood, and has had to compete with importations of coal, coke and petroleum for home and industrial fuel use. Its value will be greatly enhanced if commercial rayon can be made from it. Dr. Hagglund has produced sample fabrics woven from birch rayon that he and others claim are equal in whiteness and texture to those made from spruce. The process has now to be adapted to large scale production.

Another experiment under way is the manufacture of acetate silk from a wood pulp base. In 1931 the Cooperative Union erected a rayon pulp plant at Norrkoping, intending to begin the manufacture of acetate yarn from wood pulp. Many technical difficulties were encountered and the viscose process at length was substituted. Experiments have been continued, however, by the Union, by Dr. Hagglund's laboratory and several private company laboratories based upon substitution of wood pulp for cotton linters as the raw material for acetate rayon. The belief held is that acetate is superior to viscose, and that if Sweden can by using wood pulp and by-product chemicals bring its price down to that of viscose or lower, a new industry can arise here that will take up the lag in the lumber industry and reach profitable markets. It has been found that acetic acid can be derived partly from sulphite and partly from sulphate waste liquor on a commercial basis, so it is alleged. Dr. Hagglund's and the other laboratories have also nearly overcome the remaining obstacles in the way of utilizing wood pulp for the type of rayon in question. —American Consulate General, Stockholm.

●

## No First Quarter Exchange Permits Granted by Japan As Yet

**The news story appearing on page 10 of the January number, entitled "Japan Buys Another 63,000 Tons of Dissolving Pulp," was incorrect, and PACIFIC PULP & PAPER INDUSTRY sincerely regrets its publication.**

**Responsibility for the assumption that this was a second importation of pulp by Japan rests with this journal. Unfortunately for the pulp industry Japan granted but one group of exchange permits for the importation of wood pulp during 1938, and Rayonier Incorporated, West Coast producer of dissolving pulps, received but one order for 28,000 short tons. This was shipped in December of 1938.**

**In his statement accompanying the October 31st quarterly report of Rayonier Incorporated, President Edward M. Mills said that exchange permits had been released by Japanese authorities for the shipment of 28,000 tons of dissolving pulp during December. This statement was released around November 20th and was published on page 13 of this journal's December issue.**

**A month later the Bureau of Foreign & Domestic Commerce report referred to "Arrivals scheduled during the first three months of 1939 are as follows . . ." As the Rayonier shipments were made in December and the Department of Commerce report referred to "arrivals" during the first quarter of 1939, it was assumed that further imports had been authorized, as had long been anticipated.**

**After publication of the January number the Bureau of Foreign & Domestic Commerce received additional information to the effect that at the time the foreign exchange for the rayon pulp in question was granted, the Japanese authorities stipulated among other conditions that the pulp must be shipped (but not necessarily delivered) in November and/or December.**

# Eleven Operating Questions Discussed by Superintendents

A Transcription of the Round Table Discussion at the Superintendents' Meeting in Seattle, Saturday, December 3rd, 1938

**(1) Has anyone here had the experience of running a suction roll or suction box after the breast roll?**

Does it make any difference whether on pulp or paper?

It does not say in the question but believe such a thing is used on pulp machines and many years ago there was a patent by John Anandale for running a suction box immediately after the apron board to set the sheet on the box immediately after discharge from the slice, the idea being to produce a sheet of paper as close to hand made as possible with tensile or stretch or tear both ways. The patent has run out and for making pulp on a fourdrinier wire, I believe the roll type suction box is being used now but on paper machines I do not ever remember seeing one used in that location.

We used one quite a number of years ago. We used it under the apron to set the sheet and also to eliminate streaks. It was given a trial and taken out. It did not work out as we thought.

**(2) Does the end of grain maple suction box cover extend the life of a wire?**

I would say it would to a certain degree because the end of grain wood is a little smoother.

After you have worn out a few wires you have to plane them up again. There are more advantages for the end of grain than other types of wooden boxes.

I asked that question of Eastwood-Nealley and they get their opinion from reports received from customers. They claim that for every customer that found merit in the end of grain, they could find customers that felt the opposite. Summing up all reports for various mills they claimed they were not in a position to recommend the use of an end of grain or discourage it. They did say that if you did use end of grain box it was quite an advantage to have hard grain maple. Softer maple is hard on the wires.

Of course, after it has been in use it takes on a surface like glass. When like this there is not much wear or friction on the wire, but when it becomes necessary to dress those boxes off it shortens the life of the next wire or two.

Unless you have a grinder.

I'm speaking of dressing them with the grinder that is sold for that purpose, but still grain is opened up, and if all the boxes are dressed you shorten the life of the next two wires at least.

Has anyone had any experience with mahogany?

Yes, I have considerable. And mahogany makes a very good suction box cover. Better than maple. We have used them entirely for five years.

I thought you had to order your wood about twelve years ahead and keep it in stock to dry out for best results.

How often do you have to dress mahogany?

That depends on the grade. In making kraft, once in six months. In making fine grades, etc., you have to dress them as often as any other suction box.

On light sheets you can run about three wires before dressing mahogany.

What advantage does end of grain have over mahogany?

I don't think it has any.

It doesn't groove.

If the grain is all one way it wears in time into concave and convex ridges. If the grain is in different ways it doesn't groove so much—like a flat board would for example.

Did you ever use iron bark or iron wood?

It is more difficult to dress but you get better wear with iron bark than any other wood.

We have used it on the suction boxes on our machines and it stands up very well. Has been running for two years and have not dressed the box. It has some grooves but we don't dare to dress it because we know we will lose out by dressing it.

I don't know of anyone else using it.

The question is: Does the end of grain maple suction box cover extend the life of a wire?

Some use metal, some leather, some glass; most news mills use end of grain. Does it increase wire life?

I think we could give the answer to this question—Yes, if used intelligently.

**(3) How much increase in dryer felt life can be expected by the use of the glued dryer felt seam?**

We are using glued seams entirely now and a felt that would be ready to come off with a bootleg or herringbone seam where you could not sew the seam to hold the felt, you could glue the felt together and perhaps it would last another month. In our case it does.

So you feel the glued seam is better than the sewed?

Very much the best. And this includes the seam sewed by sewing machine and by hand.

Any seam sewn cannot compare with a glued seam.

We have increased our dryer felt life one-third by the use of glued seams.

We are still in an experimental stage and so far it looks good. We had one experience making the same width seam on a felt on an old machine with very small diameter felt rolls and the felt gave out just where the glue finished. The only place where it would part. A narrower seam might fix it but on machines where felt rolls are larger diameter they will hold up pretty well.

How long before it failed?

I could not say.

It is claimed moisture accumulates in the lap of the seam in making those cement seams and doesn't dry out. There is supposed to be about half an inch lap over the edge of the seam.

Moisture has a tendency to deteriorate the cotton fibers and open up the seam. To hold for the full life of the canvas it is good practice to cut the seam out 60 per cent through the life of the canvas and re-seam it. There was an experience at one of the mills that might be of interest to some. They had a canvas that was in storage and water dripped on it. The water went through a couple of layers at the end of the canvas and caused it to mildew. There was a half moon section equivalent to two feet in diameter of mildewed canvas which they could not cut out. Just about that time they were trying out cemented canvas. With sewed seams this mildewed canvas would not hold but they thought they would try a cemented seam. With the cement, leaving that mildewed section in, it held so well they got practically full life out of the canvas, whereas a sewed or riveted seam would have torn out.

I think a three-inch seam is as good as a six-inch. Better I think. I think it is an advantage because with a six-inch seam you will have trouble on a small roll. A three-inch seam will help it.

**(4) What is the largest diameter perforation for a suction press on a Yankee machine running light weight tissues and waxing and toilet paper and up to 50-lb. kraft wrapping, without marking the finished sheet?**

I suppose what the writer is referring to is what we know as the shell mark that we see in paper run with a suction press. What is the largest diameter perforation?

I don't think there is any limit. I think when you come to eliminate shell mark you have to do something on your felts. I don't think you can eliminate shell mark by reducing or increasing the diameter of the suction press. Believe drying is about the answer to the problem on a Yankee machine.

Does this refer to a rubber covered press?

It makes no difference.

Size about ⅛.

I don't think it makes any difference what your centers are. You will have shell mark if you don't pre-dry.

On machines where we have no predryers we get shell mark—shaded places in the sheet. Don't know the cause of it. The area around the perforation may be dryer than around the open area. The only way we can overcome this is by working on the felts. You can take weight off the press and cut your suction down. Change the design of your felt

that is on Harper machines or other tissue machines apart from the Yankee.

**(5) When sheet wrinkles at the last bottom dryer in the first section, dryers and felt rolls having been checked for alignment, drive gears put on felt dryer and air used for circulation, is it possible that the open pit at the split in the dryer sections may be a contributing factor?**

Are the two sections driven separately? Yes.

That is a pretty hard question to answer without seeing the conditions under which you are operating.

Shorten up your draw and that takes care of it very often. Have seen machines where they take the size press out and put it back again in order to shorten the draw again. As an alternative measure tighten up the draw at the third press and last dryer section to get rid of the slack. With long draws there is more stretch. Eliminate the long draws if possible. With short draws there is not so much stretch and therefore sheet is tighter.

**(6) Has anyone experienced less drying capacity with asbestos felts than with light weight cotton where speed is governed by back pressure?**

I had occasion to put on asbestos felt as top dryer and cotton felt as bottom dryer. We got less production and the product showed definite curling and was dryer on one side than on the other. The cotton felt was carrying moisture.

Asbestos felt shows the greater moisture.

Suppose if anyone had figures on the pounds of steam per pound of paper made on asbestos rather than cotton it would show asbestos felt first cost pretty high.

I know of a number of cases. I am not a paper maker but I hear these things. I know one mill where the opposite result was obtained. In other words the asbestos felt carried over too much moisture. It was running soggy. That is not any criticism of the asbestos felt. It would tend to prove that on dryer felts as on press felts what might be desirable on one machine might not be so desirable on another. The weight and porosity of a dryer felt ought to be selected to suit the particular machine conditions. Some want heavy felt and some want light or more porous felt. There are cases where cotton out-performs asbestos and cases where asbestos out-performs cotton. Governed by machine conditions, speed and weight of paper.

I think it is more necessary to have felt dryers with asbestos felts.

I think it is essential in both cases. Irrespective of whether it is asbestos or cotton it is desirable to have the felt dried out. I know that with canvas if the felt is run wet all the time it has a tendency to deteriorate the fibers. There have been instances where by putting in some dryer rolls they greatly increased the life of the canvas. However, believe that what might be the proper design on one machine would not on all others.

The question we are interested in is can we decrease felt cost and increase felt life by using an asbestos felt and still maintain production.

If you lose a couple of asbestos felts your cost goes sky high whereas the cotton felt is not so bad.

What is the experience? I am under the impression that asbestos felt on dry end more desirable than on wet end. Is that true?

Dryer felt absorbs so much moisture you get more on the wet end than on the dry end. Asbestos felt stands heat more than moisture.

I think you have the answer to it. In an asbestos felt the cotton fibers are relied upon for strength and asbestos fiber is relied upon as heat resisting material. Where there is too much moisture there is a tendency to rot the cotton fiber so that whether or not you put the asbestos felt on the dry section the cotton stands up for a longer period and permits the asbestos to do its share; whereas if you put it on the wet section the cotton fibers give away before the asbestos has lived its life.

I do know that for that reason there are mills which have used asbestos there and cotton and woolen felts on dry end. The dryer section was in one section with one long felt. They then split the section in two and the last few top dryers in the middle of the section have the felts taken off. The steam is then drawn up through vents there, instead of the felts absorbing same.

Put in felt dryers enough to dry the felt so they won't get wet. We did it in a case where we were only getting 30 days. We put in extra felt dryers and got 100 days with the same felt. Believe that the dryer felt life now depends entirely on how dry you can keep it.

When you put those felt dryers on what did it do to your cockle?

No effect.

We have plenty of cockle all right.

Did it help by installing felt dryers? No.

Is there a combination between asbestos and cotton?

There always has been.

I think there is a thread half cotton and half asbestos.

All of the threads have some cotton in them.

There are two different kinds: one type has cotton center with asbestos wrapped around it and some are made with a mixture of asbestos and cotton homogeneous through the thread. Asbestos does not have long enough fibers to make substantial thread without some cotton to get the strength. On a machine where they put on cotton felt with more porosity, the life of the dryer felt was very materially longer.

**(7) To what extent does head box or stock temperature affect quality and operating efficiency on news machines with speeds from 660 ft. to 1250 ft. per minute?**

What is meant by operating efficiency?

Keeping the paper on the machine.

Is that drainage?

No. I presume it is the running of the machine and how much better it runs one way or the other with high or low temperature in the stock.

Is this regarding the freeness?

The higher the temperature the higher the freeness. We all know the difference in summer and winter, when there is a lot of difference in the temperature of the water, when it changes from 50 to 70 degrees.

I am quite sure if you get your water warm enough to run your stock around 70 degrees you will get better machine operation than with a lower temperature. We find the machine operates better in the summer when the water is a little warmer.

How will it affect quality?

The machine may be running all right with lower temperature after running without a break but is the paper good quality? How does temperature affect qulaity?

My idea would be just the opposite. I think you would carry down with cold water.

Retarding drainage with cold water requires less water.

With lower consistency at the head box no more water is required. There is no use in putting more water in if you can't get it out. If you put more water in your sheet is usually improved.

I think temperature ties in with your formation.

600 ft. to 1250 ft. is quite a range.

We find the more water you can get into a sheet and get it out again the better your formation and the better your sheet. On newsprint, but not on a loaded sheet. The less drainage you have the better for retention of loading.

There was a paper given at the National Convention on the difference in consistency in the head box.

I know that in making certain grades of kraft you get good results by the use of water. 12,000 gallons a minute is the amount of water used.

What consistency do you have at your head box?

About .2 of 1 per cent.

That is about it on kraft.

That is a pretty light sheet isn't it?

●

**"There used to be an old saying about 'shirt-sleeves to shirt-sleeves in three generations,' but the way it is working out today we are apt to have 'shirt-sleeves to shirt-sleeves three times in one generation.'"—D. CLARK EVEREST, President of the American Paper & Pulp Association, speaking before the joint meeting of the Michigan Division of the American Pulp & Paper Mill Superintendents Association and the Kalamazoo Valley Section of TAPPI, in Kalamazoo January 5th, 1939.**

**(8) Would a hard rubber cover work on a standard bottom couch roll where a jacket is used?**

I take it he is speaking of a standard couch where top and bottom roll is used. They used to try and eliminate wire mark by using a jacket on the bottom roll. They had trouble with the jacket blowing which could only be eliminated by perforating both roll and jacket.

Would hard rubber work instead of a brass shell?

You are referring to the suction roll?

No. Standard press.

The bronze shell would be covered with rubber. Instead of having a brass jacket it would be rubber covered.

That would work out very well if you don't get too soft a rubber.

How soft can you go?

That is hard to say.

We go 50 on ours.

You must go harder than that.

It works fine with 50 on a fourdrinier machine. There is no pick up just using a jacket. It is successful with a rubber roll.

For the bottom roll inside the wire use the top roll with a jacket on it.

There is one in Canada, a Yankee fourdrinier with a standard couch, standard first and second presses, five predryers, 12 ft. Yankee dryers and 12 dryers after that. They have a rubber covered bottom couch roll on that. Don't know whether they had to grind it but probably it would wear quicker than brass and require grinding more often.

One thing about a rubber roll—we have it on a Yankee machine and it helps pick up. We find we are able to pick up longer and at higher speed with rubber roll.

It is more resilient than brass would be.

That is a good thing.

When you pick up what kind of top roll do you use in engaging your bottom roll?

Another one with 110 covering on it.

We go up as high as 190 but pick up off bronze shell with softer roll on top.

A grooved one or a plain one?

Both are used.

With a rubber covered couch do you have to run the wires tighter? Is there more tendency to slip on rubber than bronze?

I don't think so. I think it would be better with the rubber.

**(9) What is the right setting for a slice lip in relation to the apron board on high speed news machines?**

A straight slice? Yes.

Some set on the apron. Some set back on the board because you have a good level surface which is true and solid and shoots the sheet out that way. When it comes across the apron running on the wire it results in shorter wire life. There is a tendency to get the slice lip back on the apron board. That is right.

Every superintendent has his own idea on these things.

I believe most stand them behind the slice.

Back behind the apron board is the best place.

Maybe if you had your slice open you would have a certain velocity which would determine where that apron should go. This was discussed in the 1936 TAPPI collection of papers. As I recall, the discussion tended to figure out the difference between the top and bottom issue from the slice. As close to the apron as possible to avoid the set of the wire. The position of the slice can be determined depending on the type of slice. With the Venturi type there is less difference between top and bottom velocity. The nozzle type is different.

**(10) Would braze in bottom couch roll with harder metal than brass cover make ridges in the wire?**

This refers to a couch roll damaged, brazed and ground. He wants to know whether braze of the couch roll would be harder than the surface of the couch in the first place and would it damage the wire.

I don't believe it would if it is ground true.

Even solder is being used and that is softer.

I don't think it would as long as the surface is ground true.

A knot in a wood roll will mark your sheet because the rest of the roll is more resilient.

When you scrape away the soft part you leave the knot.

In this case I don't think it would do that.

Well, the ridges in the wire always come where the braze is.

Is the couch ground after brazing?

Yes.

They might have a different electrical potential which would set up a current. That, of course, is possible too.

It might cause corrosion which would cause a ridge.

That is quite an unusual condition.

The roll in question was damaged and then it was brazed. The shell was in two pieces. Brazed in the center all around where the two parts came apart. We always get a ridge in the center of the wire.

Is it an inside ridge?

Perhaps you have deflection.

We grind the couch and get two wires without a ridge and then the ridge comes back.

Is it possible that stock would collect in the pits and build up and then break away, little bits at a time?

It is quite possible that the rest of the roll is wearing and leaving the brazed part high. The stock might be collecting in the porous parts of the braze and gradually filling up and then breaking away. If he grinds the roll and gets two good wires that bears out the contention that the rest of the roll is wearing and that part is remaining higher than the body of the roll.

**(11) Moisture Control—Manual or automatic—Does the automatic give all the makers claim?**

I think they would if the machines were made so that they function correctly.

What do they do?

There are many moisture control apparatus on the market. All have good and bad points. Some think one better than the other. I think they are all of benefit regardless of what kind you get. They are better than the old hand way of trying to dry a sheet of paper.

I think there is room for a lot of work on some moisture control apparatus that would get away from the human element.

It means you would have to start experimenting with your stock and would likely run into trouble.

Whatever apparatus you have—they can go so far and no farther. One part of the sheet will still be dryer than the other. No uniform moisture content is maintained by any moisture control apparatus on the market. You will always have some spots dry and some spots wet. You can run your moisture content 4 per cent or 6 per cent or any predetermined moisture content and it will hold it there and do a good job, but if something goes wrong at the end or the middle of the machine it will show up. One day it may be dry with same moisture content and one day damp and the dry streaks will be in a different place. All these have been gained as speeds have been increased and they are all of some use and have helped a lot. I appreciate that there is no question that automatic control is away above the old manual control. But, do the automatic give all the makers claim? Don't think we need answer that. Don't think anything made that foots the bill 100 per cent. Is there anything that is all that it is claimed to be.

Are there any automatic moisture controls used on the Flakt dryers?

I guess they would be. You can use moisture control on hand made paper dried in a loft so suppose the same would be necessary on a Flakt dryer.

Do you think moisture indicators would be of more value than moisture control?

Yes.

If you have unusual conditions the operator can use his judgment.

I think where the operators come in is on radical changes. Automatic control takes care of small changes.

Automatic control is all right in any mill running the same paper all the time but in the case where you change your various weights and different papers there is a time before it gets started again.

We had a moisture control on a Flakt dryer for a year and a half for experiment and used it as an indicator to read the moisture content of the sheet on jobs that it would be better to control the humidity in the dryer and get the moisture content in the sheet from the humidity of the outgoing air rather than try to control it on the sheet.

That would be the logical way but don't know whether you could do it on a paper machine.

Edges are a problem on a paper machine. One fellow has the edge wet and another fellow has the edge dry. It is all in the dryer heads.

Has anyone had trouble with over dried edges?

I would like to get information on edges that stay wet.

I think most of those are individual problems.

That is what we are here for to help one another.

How about the crowns in the roll?

That is a contributing factor.

Think that working on the crown would help both cases—wet and dry.

What about the ventilation of your machine room? You have fresh air coming in and going up through the roof. You have air drying and steam drying together.

Dryers have higher temperature on the edges than in the center. That is one cause of dry edges.

I think it is dryers pure and simple. Some people have trouble with over dried edges. We have trouble with

edges being too wet. Think it is all in the construction of the dryers. You can't compensate in the grinding of the press roll.

The mill knows the moisture in the sheet as presented to the dryers. They take tests every few inches which show the moisture content of the sheet from back to front.

That is all right leaving the presses but out in the calendar stack the edges are wet. We blame it to the construction of the dryers.

Maybe the dryers are not wide enough for the face of the sheet you are running on the machine.

You are referring to fourdriniers. On a Yankee machine we made it a point to widen our dryer 10 inches more than the sheet we intended to run.

If that helps the wet edges it may be the cause for the over dry edges.

## Paper Production Ratio Close to 80%

• For the first four weeks of 1939 the American Paper & Pulp Association's Production Ratio Report showed the paper industry operating at 76.7 per cent of capacity. This compares very favorably with 63.9 per cent for the same period of 1938.

The week ending January 28th showed a ratio of 79.8 per cent against 68.1 per cent for the same week a year ago.

The average for the entire year of 1938 was 72.3 per cent against 89.6 per cent for 1937, 81.3 per cent for 1936 and 70.5 per cent for 1935.

Paperboard operations for January, 1939, were 60 per cent against 55 per cent for January, 1938, and 80 per cent for the same month in 1937.

## North American Newsprint Production Down 25% in 1938

• Production in Canada during December, 1938, amounted to 209,753 tons and shipments to 225,472 tons, according to the News Print Service Bureau. Production in the United States was 75,855 tons and shipments 77,974 tons, making a total United States and Canadian newsprint production of 285,608 tons and shipments of 303,446 tons. During December, 26,755 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 312,363 tons. Total production in December, 1937, was 398,187 tons.

The total North American output of newsprint paper in 1938 was 3,713,039 tons, of which 2,624,580 tons was made in Canada, 820,055 tons in the United States, and 268,404 tons in Newfoundland. The Canadian output was 28.1 percent less than in 1937, that in the United States 13.3 per cent less, with a loss of 23.3 per cent in Newfoundland, making a total continental decrease of 1,230,624 tons, or 24.9 per cent.

Stocks of newsprint paper at the end of December were 161,438 tons at Canadian mills and 18,583 tons at United States mills, making a combined total of 180,021 tons compared with 197,859 tons on November 30, 1938, and 59,240 tons on December 31, 1937.

## Bill Buchanan Visits Coast With Walter Hodges

• William E. Buchanan, president of the Appleton Wire Works of Appleton, Wisconsin, accompanied Walter S. Hodges of Portland, Appleton's Pacific Coast representative, upon his return to the Coast from a month's trip to the Middle West and East. They arrived on the Coast January 29th and after visiting a number of mills Mr. Buchanan returned on February 3rd.

Mr. Hodges' trip took him to Philadelphia where he visited the Asten-Hill plant, to Woonsocket to see the American Wringer Company, to Ottawa to call on the Capital Wire Cloth Company, to Piqua, Ohio, for a visit with the Orr Felt & Blanket Company, and to Appleton for an inspection of the Appleton Wire Works plant. Mr. Hodges has represented the above companies on the Pacific Coast for a number of years.

## Jorgenson Making Trip to Japan

• Pulp and paper exporters in British Columbia who in past years have regarded the Orient as one of their most desirable sales outlets are hoping for an early improvement in the situation there. But so far the most optimistic report is that conditions, at least in Shanghai, are no worse than they were a few months ago — perhaps a little better. Meantime practically no business is being done in newsprint, although a few small shipments of pulp have been sent across the Pacific for rayon production in Japanese mills.

Oscar Jorgenson, treasurer and assistant managing director of British Columbia Pulp & Paper Company, which under normal conditions sells heavily in the Far East, is now in Japan looking over the ground. He sailed from Vancouver in January and plans to return some time in March. Mr. Jorgenson has made frequent trips to the Orient for his company and has kept closely in touch with the situation during the period of the Sino-Japanese incident. However, it is the experience of most pulp and paper executives that correspondence by mail and cable is a poor substitute for personal contact in doing business with Japan and China, and for that reason he decided to make his present journey. Whether he will visit the mainland of Asia and continue his market survey in China was not known when he left Vancouver, but it is probable that he will include Shanghai in his itinerary.

H. J. McKenzie, manager of Export Sales Company, Vancouver, believes that business may show some revival in China soon after the traditional new year late this month. He points out that while industry has been disturbed on a tremendous scale the Chinese are probably more resilient than any other race, and recovery once it starts in the Shanghai area will probably be rapid. The war has not obliterated the Chinese way of doing business, either, and it is expected that when the new Chinese year begins the orders may materialize in fair volume.

Mr. McKenzie paid a visit to China and Japan last year and even then noticed evidence of gradual recovery.

## Several Coast Men To Attend TAPPI Meeting

• The Pacific Coast industry will be well represented at the annual meeting of TAPPI which is to be held at the Hotel Roosevelt, New York City, February 20-24th, coincident with the Annual Meeting of the American Paper & Pulp Association at the Waldorf-Astoria.

Albert Bankus, vice-president of the Crown Zellerbach Corporation, and G. S. Brazeau, manager, Everett Mill, Pulp Division Weyerhaeuser Timber Company, will attend as the two Pacific Coast members of TAPPI's Executive Committee.

N. W. Coster, technical director of the Soundview Pulp Company and chairman of the Pacific Section of TAPPI, and William R. Barber, technical director of the Crown Zellerbach Corporation and a past chairman of the Pacific Section of TAPPI are also attending the New York meeting.

## Another Paper Milk Bottle Machine for San Francisco

• The Clara-Cal Dairy Co., San Francisco, installed a new Pure-Pak paper milk bottling machine, at its plant at 2065 Oakdale Avenue.

An interesting feature about the Clara-Cal Dairy Co. is that it is a 100 per cent paper bottling operation—no glass bottles at all are being used. Manuel Piers is general manager of the Clara-Cal company.

This is the second Pure-Pak paper milk bottling machine to go into San Francisco. The other, and the first installed in California, is in operation at the Lucerne Cream & Butter Company (Safeway) plant. This company now owns and operates six Pure-Pak machines throughout California.

## Ted Cooper Recovering From Illness

• E. W. G. Cooper, assistant paper mill superintendent for the Crown Willamette Paper Co. at Camas, has left the Vancouver hospital where he was being treated, and is convalescing in a rest home.

A. D. "Dad" Wood, sulphite pulp supervisor and sage of Pumpkin Center, is back on the job after a siege of flu.

## Vic Gault— Carpenter, Plumber, Etc.

• To his other accomplishments, Vic Gault, the Camas personnel supervisor for Crown Zellerbach Corporation, has lately added those of being carpenter, plumber and various other artisans of the building trade. Since December he has, by his own hands, added a room and bath in his Camas home, installed built-in furniture, etc., making an attractive addition to his already large establishment.

## Vilas Joins Superintendent's Association

• W. H. Vilas of the Crown Willamette Paper Company Division of Crown Zellerbach Corporation at Camas, Washington, recently became a member of the American Pulp & Paper Mill Superintendent's Association.

# An Automatic, Synchronized Layboy System for Sheet Pulp

As Developed by the Pulp Division, Weyerhaeuser Timber Company, Longview, Washington

THE pulp sheet cutter and layboy in use by the Longview Pulp Division of the Weyerhaeuser Timber Company is one which, while similar in general principles to other mill systems, has a number of features making it of interest to the industry and worthy of description.

In approaching the problem, the Weyerhaeuser engineering department and Mailler Searles, Incorporated, who together designed the unit, were faced with the necessity of working out a plan that would fit into the existing space, tie in with the equipment without changes in the set-up, and at the same time be easily removable. A further and more difficult problem was to make the drive completely automatic.

The accompanying floor plan shows how the layboy and conveyors were arranged in the available space between the end of the dryer and the presses and tying machines.

Sheets are cut on a Beloit rotary cutter which produces 30 by 30-inch sheets as the pulp comes from the 152-inch Minton vacuum dryer at speeds from 175 to 220 feet per minute. This unit is similar to the Beloit cutter in the Weyerhaeuser mill at Everett, but is 9 inches higher and has a different speed variation control by means of a V-belt and adjustable pulley, instead of flat belt and step pulleys.

Different speeds of the dryer of course require adjustment of the speed of the cutter to obtain the proper peripheral speed for production of uniform size sheets. Means for the regulation of the speed at which the knife is operated is built into the assembly by the inclusion of a TE-5 Link-Belt P. I. V. speed reduction unit between the source of power and the cutter.

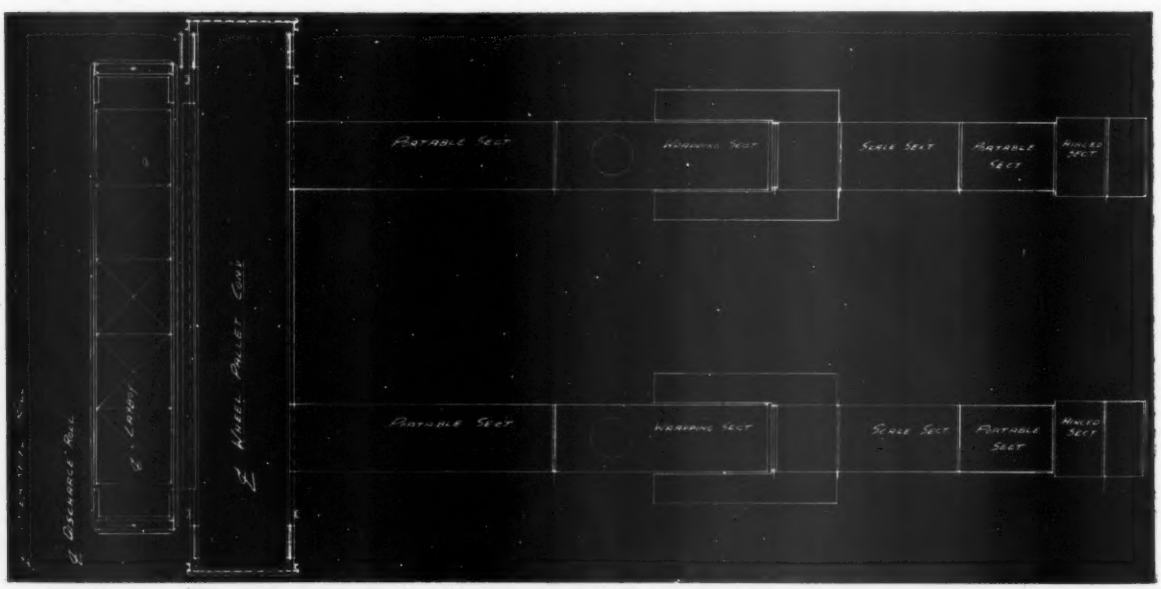
● Exact speed is secured by adjustment of the control screw from the handwheel control conveniently located on the machine floor. Link-Belt Silverlink roller chains and sprockets, and Link-Belt Timken pillow blocks are also incorporated in the assembly by the Beloit Iron Works.

The cut sheets drop into their respective bins or compartments atop the layboy, and the stack is built up on a carriage with a surface of conveyor wheels. The carriage slowly lowers as the stack builds up, until a certain level is reached, when the stack is lowered to the pallet conveyor.

In designing the equipment, one problem was to provide a drive that would have a 40 to 1 speed variation, so that the stacks might be speedily delivered to the conveyor system and return to receive the next stack, and yet provide the slow speed necessary for lowering while the stack was building up. This was solved, on the suggestion of General Electric Company engineers, by use of a combination of a DC motor and an AC motor, with an electric clutch between.

The DC motor drives the carriage down at the controlled slow speed, receiving its power from the machine M.G. generator. When it reaches a certain level, which is adjustable by the weigher, the electric clutch disengages and the AC motor drives the carriage down at the higher speed, 40 times as fast. At the bottom, the carriage tips and the stacks roll off automatically onto the pallet conveyor.

When the carriage starts down at its higher speed, arm pins come into the bottom of the partitions to hold the sheets while the carriage is travelling down and back. A timing device, utilizing photo electric cells, synchronizes the time at which the arms come in, so that they come be-



tween the sheets without danger of catching them as they pass.

Another unit with two photo electric cells prevents the AC motor from returning the carriage to the top position until the rolls are clear. If the rolls are not cleared within a certain interval, a timing device sounds an alarm, calling the tender to remove the difficulty.

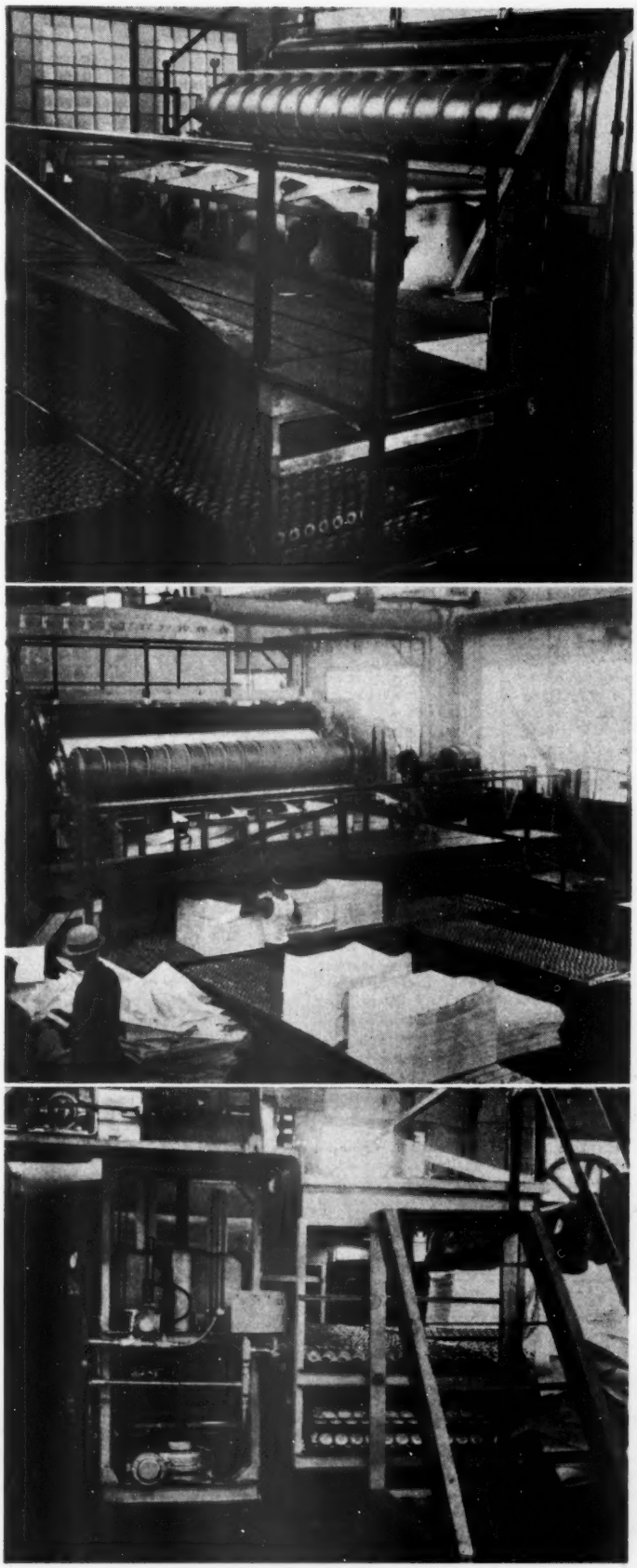
The carriage then returns to its top position. Again a time switch controls the period of time after the carriage has reached the top limit switch, in order to allow it to come to rest before the pin arms are withdrawn, permitting the sheets to fall on the carriage.

Stacks from the layboy roll by gravity onto the pallet conveyor. This consists of a series of ball bearing wheels mounted on pallets. It forms an endless wheel conveyor which is reversible in order to bring the stacks in line with the conveyors to the wrapping section and the presses. It is driven by a General Electric gear motor through a chain drive.

● As the stacks are lined up with the conveyors to the presses, they are pulled off onto the conveyors over which they go by gravity to the turntable section. The turntable is raised by foot pressure by the operator, and the stacks are then turned by hand through an arc of 180 degrees.

The reason for this step is that as the stacks travel over the conveyors, they have a tendency to lag behind at the bottom, making a pile that is not square. By turning them 180 degrees and allowing them to travel the rest of the distance to the presses the piles have a tendency to square themselves up again and be in proper alignment for pressing and wrapping.

As the stack reaches the wrapping station, it automatically picks up the bottom wrapper. The wrapper is



**The BELOIT Rotary Cutter discharges the 30 x 30 inch pulp sheets into piles which automatically lower to level of conveyor.**

**When the piles have reached predetermined height they are automatically discharged on to cross conveyor shown in middle picture and then conveyed to either of the two baling presses.**

**The raising and lowering mechanism is shown in the bottom photograph.**

inserted in a space between conveyor sections, with part extending out over the rolls, and the remainder resting on an inclined sheet of metal below the conveyor.

The stack then goes on to the scale section, where it is brought to proper weight. A cross conveyor at the layboy permits delivery of the pulp sheets to either of the two baling presses.

● Prior to the installation of this equipment, there was heavy manual work to be done at the dry end of the machine. This has been eliminated by the unit.

The pallet conveyor and conveyor tables to scales are mounted on castors to facilitate removal during preparation of pulp wrappers or pulp prepared in roll form.

## Hallonquist Joins National TAPPI

● Earl G. Hallonquist, research chemist with Rayonier Incorporated, Shelton Division, recently became a member of National TAPPI. Mr. Hallonquist received his Doctor of Philosophy degree in 1933 from McGill University at Montreal, and he formerly was with the Dow Chemical Company.

## Talk Paper Milk Containers for Vancouver

● Market for paper milk bottles may be developed on a fairly large scale in Vancouver and other western Canadian points as a result of the action being taken by Vancouver city council to amend civic by-laws providing for their use.

Under the present by-law it is stipulated that all milk containers shall be sterilized with live steam by distributing dairies — an impossible procedure, of course, with paper containers.

Richmond Dairy, Ltd., is the first company in Vancouver planning to adopt the paper bottle idea, and it is through its representations that the council has decided on the amendments. The containers will come from eastern Canada, but it is probable that if the market develops as expected British Columbia mills will install the necessary equipment.

W. S. Dirker, general manager of American Can Company, at Vancouver, told Pacific Pulp & Paper Industry that his company is manufacturing paper bottles for milk in eastern United States, but he doubted whether the market in British Columbia would warrant entry into that field.

J. A. Young, vice-president of Pacific Mills, Ltd., operators of a paper converting plant in Vancouver and an important factor in the paper container industry, says that he is watching developments closely, but so far no definite move has been made to install bottling machinery.

Toronto, Montreal and Winnipeg are among the larger Canadian cities using paper milk bottles.

## Van Arnam Temporarily In San Francisco Office

● W. J. Van Arnam, office manager for the Crown Willamette mill at Camas, has recovered from his recent extended illness, and together with Mrs. Van Arnam, has gone to San Francisco where he will be located in the Crown Zellerbach Corporation offices for some time. Mr. and Mrs. Van Arnam left the first of February, and drove to California.

## Brinkley to Represent Pulp Bleaching Company

● In view of the increasing amount of Pulp Bleaching Company purification equipment in operation on the Pacific Coast, Raymond P. Hill, president of the company, announced during January the appointment of the James Brinkley Company as Pacific Northwest representatives.

The James Brinkley Company, located at 417 Ninth Avenue South in Seattle, will service the Pulp Bleaching Company's installed equipment which now totals a very large number of units in Pacific Northwest pulp and paper mills.

Through this arrangement a larger part of the Pulp Bleaching Company's equipment for future installations will be fabricated locally.

James F. Brinkley, president of the company bearing his name, is well known in the West Coast pulp and paper industry as an engineer specializing in the design and construction of materials handling equipment. He served as chairman of the last meeting of the Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association which was held in Seattle in December of last year.

Mr. Hill, accompanied by Mrs. Hill, spent nearly a month in the Pacific Northwest during December and January. During this time he called upon the large number of users of his company's equipment before returning to the Pulp Bleaching Company's headquarters in Orange, New Jersey.

## Powell River, Pacific Mills Averaging Around 60%

● Although Canadian newsprint operations have been further curtailed seasonally—Powell River Company and Pacific Mills in British Columbia are averaging about 60 per cent of capacity, production has generally been ahead of a year ago.

Total Canadian newsprint output for January was about 195,000 tons, a seasonal decline from the 210,000 tons for December, but up 10 per cent over the January, 1938, figure.

The inventory situation is believed to have improved materially in the United States, with publishers' supplies down to an approximation of the normal level. At the end of last December newsprint sotcks in North America were 620,548 tons, the lowest since February, 1937, and contrasted with 877,519 tons at the end of December, 1937. At the end of January, 1938, stocks were 882,534 tons.

But unless consumption increases substantially, operations will continue at a limited rate for a time, until the remaining surplus, or excess of stocks above normal, is eliminated. This may require four or five months, or less, depending on newsprint demand, operations believe.

## Ross Equipment Working Fine at Pomona

● The new Ross Hood installed on the No. 2 machine at the California Fruit Wrapping Mills at Pomona, California, last November and the Grewin System installed at the same time are both proving very effective, according to Chas. G. Frampton, superintendent.

## Pacific Waxed Paper To Build in Los Angeles

● Pacific Waxed Paper Company will build a new warehouse in Los Angeles. Charles L. Brouse is resident manager. Location of the new building has not been announced yet.

**JAMES F. BRINKLEY**
**Representing Pulp Bleaching Company**

**RAYMOND P. HILL**
**President, Pulp Bleaching Company**

# The Japanese Pulp Situation

**During the third quarter of 1938 – Domestic production down 7.7% below third quarter of 1937 but 4.4% above second quarter of 1938 – Imports down 92.6% below third quarter of 1937 – Data from report of CARL H. BOEHRINGER, Assistant U. S. Trada Commissioner, Tokyo, Japan**

PRODUCTION of wood pulp by members of the Japan Paper Manufacturers' Association during the 1938 third quarter aggregated 408,065,000 pounds, a gain of 4 per cent from the preceding quarter but 7.7 per cent less than the record-breaking amount turned out during the 1937 third quarter. Seasonal factors are believed to be responsible for the increased output, compared with the preceding quarter.

Table No. 1 summarizes wood pulp production by members of the Japan Paper Manufacturers' Association, as reported in the association's monthly trade journal. The data include output in Japan proper, Hokkaido, Karafuto (Japanese Saghalien) but excludes production in Chosen (Korea).

It will be noted that output of chemical pulp has declined in contrast to an increase in production of mechanical pulp. The position is indicated in Table No. II which shows that September, 1938, output of mechanical pulp is the largest recorded in 1937 and thus far in 1938. At the same time, output of chemical pulp in September, 1938, is the largest monthly total since November, 1937.

Acording to this data, the monthly average of production during the first nine months of 1938 was 6.2 per cent below the monthly average for the 12 months of 1937. All of the decline took place in output of chemical pulp with the amount of mechanical pulp produced being somewhat greater than in 1937.

Wood pulp production during the first nine months of 1938 amounted to 1,169,117,000 pounds, a decline of 6.6 per cent from the corresponding total in 1937 but a gain of 5.6 per cent from the amount turned out during the first nine months of 1936. Table No. III summarizes wood pulp production during the first nine months of the years 1935 to 1938 inclusive, as reported by the Japan Paper Manufacturers' Association.

Whereas output of chemical pulp during the first nine months of 1938 was 93,027,000 pounds less than the amount produced during the same period in 1937, the volume of mechanical pulp turned out gained by 10,523,000 pounds. Total production during the 1938 period under review was 82,504,000 pounds below the corresponding total last year.

## Noda Plant to Make Rayon Pulp

● It is reported that during the past several months the Oji Paper Manufacturing Company's pulp plant at Noda, in Karafuto (Japanese Saghalien), heretofore engaged in the manufacture of high grade paper pulp, is being equipped to take up large scale production of rayon pulp. This has tended to affect total production appreciably and, since the change-over from paper pulp to rayon pulp will not be completed until early in 1939, it is expected that the level of output of chemical pulp during the 1938 fourth quarter will continue to be below that of the 1937 level. In March, 1937, the Noda plant was reported to have an annual productive capacity of 22,500 tons of bleached sulphite pulp and 39,000,000 pounds of printing paper and simili paper.

## Imports of Wood Pulp

● Wood pulp imports into Japan during the 1938 third quarter included only 2,888 long tons of paper pulp and 6,757 tons of rayon pulp, the total of 9,645 tons declining 80 per cent from the preceding quarter's arrivals but fully 92.6 per cent from the amount imported during the 1937 third quarter. Table No. IV summarizes imports of wood pulp into Japan by quarters during 1936 and 1937 and during the first three quarters of 1938.

Imports during the period under review are the smallest for any calendar quarter in many years. The outlook thus far for the 1938 fourth quarter points to further decreased imports, with practically all of the pulp being supplied from Japanese mills in Manchuria.

As indicated in a subsequent section of this report, some action is being contemplated with regard to the long pending matter of granting exchange permits for the 58,000 metric tons of rayon pulp for which import permits were granted last spring.

## Imports of Pulp by Countries of Origin

● Imports of wood pulp according to countries of origin during the third quarter of 1937 and 1938 as reported in the official monthly trade return are given in Table V.

### Table No. I

### Chemical and Mechanical Wood Pulp Production

(In 1,000 Pounds)

| Month | Third Quarter, 1937 | | | Third Quarter, 1938 | | |
|---|---|---|---|---|---|---|
| | Chemical | Mech'cal | Total | Chemical | Mech'cal | Total |
| July | 80,120 | 65,479 | 145,599 | 66,137 | 67,680 | 133,817 |
| August | 82,612 | 66,233 | 148,845 | 66,796 | 70,061 | 136,857 |
| September | 81,825 | 66,105 | 147,930 | 67,115 | 70,276 | 137,391 |
| Total | 244,557 | 197,817 | 442,374 | 200,048 | 208,017 | 408,065 |

### Table II

### Summary of Wood Pulp Production, 1937-38

(Volume in 1,000 Pounds)

| Month | 1937 | | | 1938 | | |
|---|---|---|---|---|---|---|
| | Chemical | Mech'cal | Total | Chemical | Mech'cal | Total |
| January | 63,826 | 60,947 | 124,773 | 62,652 | 62,445 | 125,097 |
| February | 66,046 | 64,665 | 130,711 | 61,965 | 64,986 | 126,951 |
| March | 63,932 | 59,658 | 123,590 | 60,139 | 58,845 | 118,984 |
| April | 76,869 | 65,641 | 142,510 | 65,765 | 65,653 | 131,418 |
| May | 77,184 | 65,152 | 142,336 | 63,079 | 64,898 | 127,977 |
| June | 79,554 | 65,773 | 145,327 | 65,293 | 65,332 | 130,625 |
| July | 80,120 | 65,479 | 145,599 | 66,137 | 67,680 | 133,817 |
| August | 82,612 | 66,233 | 148,845 | 66,796 | 70,061 | 136,857 |
| September | 81,825 | 66,105 | 147,930 | 67,115 | 70,296 | 137,391 |
| October | 78,967 | 64,285 | 143,252 | | | |
| November | 71,109 | 66,463 | 137,572 | | | |
| December | 66,034 | 63,900 | 129,934 | | | |
| Average | 74,006 | 64,525 | 138,531 | 64,326 | 65,576 | 129,902 |

### Table No. III

### Output of Wood Pulp, First Nine Months, 1935-38

(Volume in 1,000 Pounds)

| Nine Months | Chemical | Mechanical | Total |
|---|---|---|---|
| 1935 | 551,418 | 512,008 | 1,063,426 |
| 1936 | 572,952 | 533,225 | 1,106,177 |
| 1937 | 671,968 | 579,653 | 1,251,621 |
| 1938 | 578,941 | 590,176 | 1,169,117 |
| Average | 593,820 | 553,765 | 1,147,585 |

# fluid transportation engineers!

● If you have ever bought a pump or had anything to do with pumps, then you will be interested in a certain group of men at the Bingham Pump Company. Hydraulically speaking, they are "*fluid transportation engineers.*" For example, the "Pulp Hog," a pump that cannot become air-bound, was developed by our engineers to take pulp directly from the doctor blades of Deckers, Washers, or Thickeners. The "Pulp Hog," in performing this service, has in many instances eliminated expensive dump chests, proves that there is no substitute for practical "specialized" engineering.

From hours spent over drawing boards and the use of "slipsticks" comes the engineering that makes Bingham pumps operate faithfully day after day with lower costs than other pumps. Truly, a Bingham pump is an efficient hydraulic machine for the economical transportation of pulp.

At the Bingham factory there are gray haired engineers who have spent a life-time solving intricate industry pumping problems . . . there are middle-aged engineers who have the "feel" for the specialized hydraulics required by a company that does specialize. Then there's another group of young engineers not long out of college.

*The patented Bingham Pulp Hog for pumping stock containing large volumes of entrained air at constant rate of flow without becoming air-bound or clogged.*

These youngsters are full of ideas. Some of the ideas are particularly good. It's no wonder then that there's a lot of enthusiasm when a new problem is turned over to the engineering department and test laboratory.

You really ought to meet this "gang" because they eat and sleep pumps. If there is a problem in *fluid transportation* they haven't worked on . . . they're curious and eager to burn the midnight oil until they have it whipped.

Over the United States there are a number of companies that make high grade pumping equipment. But, you can look the whole country over and you will not find one with a group of engineers who are more anxious, more ingenious, more conscientious and more interested in your problems than the *fluid transportation engineers* of the Bingham Pump Company.

If you are worrying about a pumping problem that is costing you too much because of low efficiency, interrupted operations, or shut-downs due to excessive maintenance, etc. . . . why not let these fellows who have "specialized" in pulp and paper industry pumping problems tackle your problem individually and collectively.

Randolph Bingham

**BINGHAM PUMP COMPANY . . . . . PORTLAND, OREGON**

## Table No. IV

### Summary, Imports of Wood Pulp, 1936-38

(Volume in Long Tons)

| 1936 | Rayon | Paper | Total | Total Value, Yen |
|---|---|---|---|---|
| First Quarter | 34,308 | 44,715 | 79,023 | 15,298,436 |
| Second Quarter | 39,087 | 34,983 | 74,070 | 15,109,284 |
| Third Quarter | 45,469 | 41,392 | 86,861 | 17,756,049 |
| Fourth Quarter | 50,505 | 36,012 | 86,517 | 18,943,288 |
| Average per Quarter | 42,342 | 39,275 | 81,618 | 16,776,764 |
| 1937 | | | | |
| First Quarter | 45,530 | 34,877 | 80,507 | 18,176,034 |
| Second Quarter | 72,601 | 52,492 | 125,093 | 29,901,538 |
| Third Quarter | 76,348 | 53,976 | 130,324 | 33,070,373 |
| Fourth Quarter | 96,048 | 34,743 | 130,791 | 35,571,907 |
| Average per Quarter | 72,632 | 44,022 | 116,654 | 29,179,963 |
| 1938 | | | | |
| First Quarter | 55,492 | 18,167 | 73,659 | 20,142,077 |
| Second Quarter | 45,690 | 3,436 | 49,126 | 14,961,895 |
| Third Quarter | 6,757 | 2,888 | 9,645 | 3,390,760 |
| Average per Quarter | 35,979 | 8,163 | 44,142 | 12,831,577 |

## Table V

### Imports, Wood Pulp, Japan, Third Quarter, 1937-38

(Volume in 100 Kin—Value in Yen)

| From | Third Quarter, 1937 Volume | Third Quarter, 1937 Value | Third Quarter, 1938 Volume | Third Quarter, 1938 Value |
|---|---|---|---|---|
| United States | 974,188 | 14,865,047 | 24,140 | 484,321 |
| Sweden | 532,333 | 7,219,091 | 18,393 | 353,558 |
| Norway | 222,698 | 3,660,443 | 31 | 349 |
| Canada | 301,984 | 4,710,481 | 2,155 | 37,515 |
| Finland | 143,555 | 2,056,391 | 9,449 | 156,090 |
| Czechoslovakia | 25,816 | 420,632 | ——— | ——— |
| Great Britain | 2,601 | 48,270 | 2 | 49 |
| Germany | 1,684 | 19,391 | ——— | ——— |
| Others | 3,735 | 70,627 | 109,163 | 2,358,878 |
| Total | 2,208,594 | 33,070,373 | 163,333 | 3,390,760 |

Note: 100 kin equal 132.2772 pounds or 60 kilograms.

## Table VI

### Imports of Wood Pulp From Unspecified Countries Compared With Imports From Manchuria Alone

(Volume in Pounds—Value in Yen)

| 1938 | Imports from "Others"* Volume | Imports from "Others"* Value | Imports from Manchuria** Volume | Imports from Manchuria** Value |
|---|---|---|---|---|
| January | 225,003 | 23,864 | ——— | ——— |
| February | 1,836,537 | 221,877 | ——— | ——— |
| March | 1,680,053 | 217,077 | 115,200 | 19,992 |
| April | 2,355,592 | 344,287 | 2,112,932 | 316,606 |
| May | 2,260,221 | 397,501 | 2,278,267 | 397,501 |
| June | 1,664,047 | 297,438 | 1,644,133 | 293,586 |
| July | 3,984,983 | 678,557 | 4,016,801 | 678,557 |
| August | 4,266,337 | 683,980 | 3,292,133 | 550,896 |
| September | 6,188,457 | 996,341 | 6,237,867 | 996,341 |

*As reported in official monthly trade return.
**As reported in the monthly trade journal of the Japan Paper Manufacturers' Association.

## Table VII

### Imports, Wood Pulp, Japan From Manchuria

(Volume in Pounds—Value in Yen)

| 1938 | Chemical Paper Pulp Volume | Chemical Paper Pulp Value | Chemical Rayon Pulp Volume | Chemical Rayon Pulp Value | Total Pulp Volume | Total Pulp Value |
|---|---|---|---|---|---|---|
| March | 115,200 | 19,992 | ——— | ——— | 115,200 | 19,992 |
| April | 1,444,799 | 200,601 | 668,133 | 116,005 | 2,112,932 | 316,606 |
| May | 64,667 | 8,982 | 2,213,600 | 338,519 | 2,278,267 | 397,501 |
| June | ——— | ——— | 1,644,133 | 293,586 | 1,644,133 | 293,586 |
| July | 1,033,067 | 155,323 | 2,983,734 | 523,234 | 4,016,801 | 678,557 |
| August | 3,600 | 275 | 3,288,533 | 550,621 | 3,292,133 | 650,896 |
| September | 1,770,000 | 218,776 | 4,467,867 | 777,565 | 6,237,867 | 996,867 |

During the period under review, fully 67 per cent of total imports were received from unspecified countries indicated in the foregoing table as "Others." Practically all of the pulp received from "Others" during the 1938 third quarter originated in Manchuria.

### Imports From Manchuria

● Our last report contained references to the growth of imports of pulp from Manchuria, a table being included comparing arrivals from "Others," as reported in the official trade return, with improts from Manchuria as reported by the Japan Paper Manufacturers' Association. The same table is brought up to date and includes data for August and September in Table VI.

As previously indicated, the Paper Manufacturers' Association converts 100 kin into pounds at the rate of 133⅓ pounds instead of at the officially accepted rate of 132.2772 pounds. This fact accounts for the slight variations noted in May, July and September when impotrs from "Others" came entirely from Manchuria, as indicated further by the fact that the value in both cases are the same.

Details concerning the imports of wood pulp from Manchuria are reported in Table VII by the Japan Paper Manufacturers' Association.

In view of the great demand for wood pulp in Japan under present circumstances, it is expected that every effort will be made to increase output at the Japanese mills in Manchuria. Since Manchuria is included in the "yen-bloc combine," no import or exchange permits are required for purchases from that area, a factor that automatically favors increased imports even at higher prices than those quoted for pulp obtainable from foreign countries.

### Imports During First Nine Months, 1938

● Attached hereto are data detailing the imports of wood pulp into Japan by countries of origin during the first nine months of 1936 to 1938 inclusive, as reported in the official monthly trade return. Converted into long tons, it is noted that arrivals during the 1938 first nine months were 132,430 tons, declines of 60.5 per cent and 42.4 per cent from corresponding imports in 1937 and 1936. Table No. VIII summarizes imports of paper and rayon pulp during the nine months of the years 1936, 1937 and 1938.

As pointed out in our last report, the official trade returns show imports of pulp by countries only as a combined total for paper and rayon pulp. The Japan Paper Manufacturers' Association, however, reports these data separately in Table IX under the headings "Rayon chemical pulp" and "Paper chemical pulp," during the first nine months of 1937 and 1938.

As previously indicated, the Paper Manufacturers' Association uses a conversion factor slightly larger than the officially approved one of 100 kin equal to 132.2772 pounds.

# PULP BLEACHING COMPANY

ORANGE, NEW JERSEY

Contracting Engineers in Cellulose Purification

Complete installations for bleaching and refining.

Special equipment for any application of chemically treating, washing, dewatering or agitating fibre suspensions.

Now represented in the Pacific Northwest by

## JAMES BRINKLEY COMPANY

417 Ninth Avenue South

SEATTLE

## Table No. VIII

### Imports, Wood Pulp, Japan, First 9 Months, 1936-38

(Volume in Long Tons—Value in Yen 1,000)

| | 1936 | | 1937 | | 1938 | |
|---|---|---|---|---|---|---|
| | Volume | Value | Volume | Value | Volume | Value |
| Paper Pulp | 111,348 | 17,396 | 141,344 | 28,505 | 24,491 | 6,354 |
| Rayon Pulp | 118,607 | 30,768 | 194,578 | 52,633 | 107,939 | 32,141 |
| | 229,955 | 48,164 | 335,922 | 81,148 | 132,430 | 38,495 |
| **Per cent from** | | | | | | |
| United States | 48.8 | 49.3 | 40.3 | 42.3 | 38.8 | 39.1 |
| Sweden | 17.0 | 14.1 | 27.0 | 24.1 | 17.0 | 14.8 |
| Norway | 15.9 | 20.4 | 13.1 | 14.7 | 13.6 | 13.9 |
| Canada | 8.1 | 6.0 | 11.2 | 10.2 | 12.6 | 13.1 |
| Finland | 9.5 | 9.4 | 7.3 | 7.3 | 9.4 | 8.6 |
| Others | 0.7 | 0.8 | 1.1 | 1.4 | 8.6 | 10.5 |

## Table IX

### Imports of Paper and Rayon Pulp, Japan, 9 Months, 1937-38

(Volume in 1,000 Pounds)

| | Nine Months, 1937 | | | Nine Months, 1938 | | |
|---|---|---|---|---|---|---|
| From | Paper | Rayon | Total | Paper | Rayon | Total |
| United States | 88,284 | 217,172 | 305,456 | 19,660 | 96,215 | 115,875 |
| Canada | 66,760 | 18,173 | 84,933 | 1,308 | 36,596 | 37,904 |
| Sweden | 141,587 | 63,213 | 204,800 | 23,756 | 27,088 | 50,844 |
| Norway | 11,342 | 87,900 | 99,248 | 1,014 | 40,850 | 41,864 |
| Finland | 10,305 | 45,386 | 55,691 | 4,802 | 23,237 | 28,038 |
| Great Britain | 11 | 347 | 358 | ..... | ..... | ..... |
| Germany | ..... | ..... | ..... | ..... | 256 | 255 |
| France | 342 | ..... | 342 | ..... | ..... | ..... |
| Switzerland | ..... | ..... | ..... | 293 | 339 | 632 |
| Czechoslovakia | 171 | 6,917 | 7,088 | ..... | 483 | 583 |
| Italy | ..... | 228 | 228 | ..... | 1 | 1 |
| Others | 330 | ..... | 330 | 4,465 | 18,550 | 23,015 |
| Total | 319,138 | 439,336 | 758,474 | 55,297 | 243,715 | 299,012 |

## Table X

### Average Monthly Quotations—Domestic Sulphite Paper Pulp—Unbleached

(In yen per pound—ex warehouse Yokohama)

| Month | 1935 | 1936 | 1937 | 1938 |
|---|---|---|---|---|
| January | 0.082 | 0.075 | 0.110 | 0.150 |
| February | 0.082 | 0.075 | 0.120 | 0.150 |
| March | 0.082 | 0.075 | 0.120 | 0.150 |
| April | 0.082 | 0.075 | 0.135 | 0.150 |
| May | 0.080 | 0.075 | 0.140 | 0.150 |
| June | 0.080 | 0.075 | 0.140 | 0.140 |
| July | 0.080 | 0.077 | 0.145 | 0.145 |
| August | 0.080 | 0.077 | 0.145 | 0.140 |
| September | 0.080 | 0.077 | 0.150 | 0.140 |
| October | 0.080 | 0.077 | 0.150 | 0.140 |
| November | 0.080 | 0.090 | 0.150 | |
| December | 0.080 | 0.090 | 0.150 | |
| Average | 0.081 | 0.079 | 0.138 | 0.145 |

## Table No. XI

### Average Monthly Quotation for Imported Wood Pulp

(In Yen Per Pound)

| | Prices for Paper Pulp | | | Prices for Rayon Pulp | | |
|---|---|---|---|---|---|---|
| Month | 1936 | 1937 | 1938 | 1936 | 1937 | 1938 |
| January | 0.062 | 0.074 | 0.113 | 0.115 | 0.116 | 0.129 |
| February | 0.062 | 0.072 | 0.109 | 0.115 | 0.117 | 0.123 |
| March | 0.062 | 0.077 | 0.108 | 0.115 | 0.117 | 0.123 |
| April | 0.062 | 0.077 | 0.132 | 0.116 | 0.118 | 0.135 |
| May | 0.062 | 0.080 | 0.119 | 0.115 | 0.118 | 0.134 |
| June | 0.062 | 0.083 | 0.139 | 0.115 | 0.119 | 0.135 |
| July | 0.062 | 0.094 | 0.137 | 0.115 | 0.119 | 0.165 |
| August | 0.062 | 0.087 | 0.112 | 0.115 | 0.119 | 0.167 |
| September | 0.082 | 0.089 | 0.123 | 0.115 | 0.119 | 0.172 |
| October | 0.064 | 0.090 | | 0.115 | 0.121 | |
| November | 0.164 | 0.091 | | 0.115 | 0.122 | |
| December | 0.064 | 0.091 | | 0.116 | 0.122 | |
| Average | 0.063 | 0.083 | 0.121 | 0.115 | 0.119 | 0.143 |

## Exports of Wood Pulp

● No exports of pulp were made either during the second or third quarters of 1938. During the 1937 third quarter, however, shipments were made totalling 4,915,000 pounds. Exports during the first nine months of 1938 were limited entirely to the 2,646 pounds exported during the first quarter; during the corresponding period of 1937 exports aggregated 5,811,000 pounds.

## Prices for Domestic and Imported Pulp

● Table No. X gives details of the average monthly quotations for domestic unbleached sulphite paper pulp during the years 1935 to 1937 inclusive and during the first ten months of 1938, as reported by the Oji Paper Manufacturing Company and published in the monthly trade journal of the Japan Paper Manufacturers' Association.

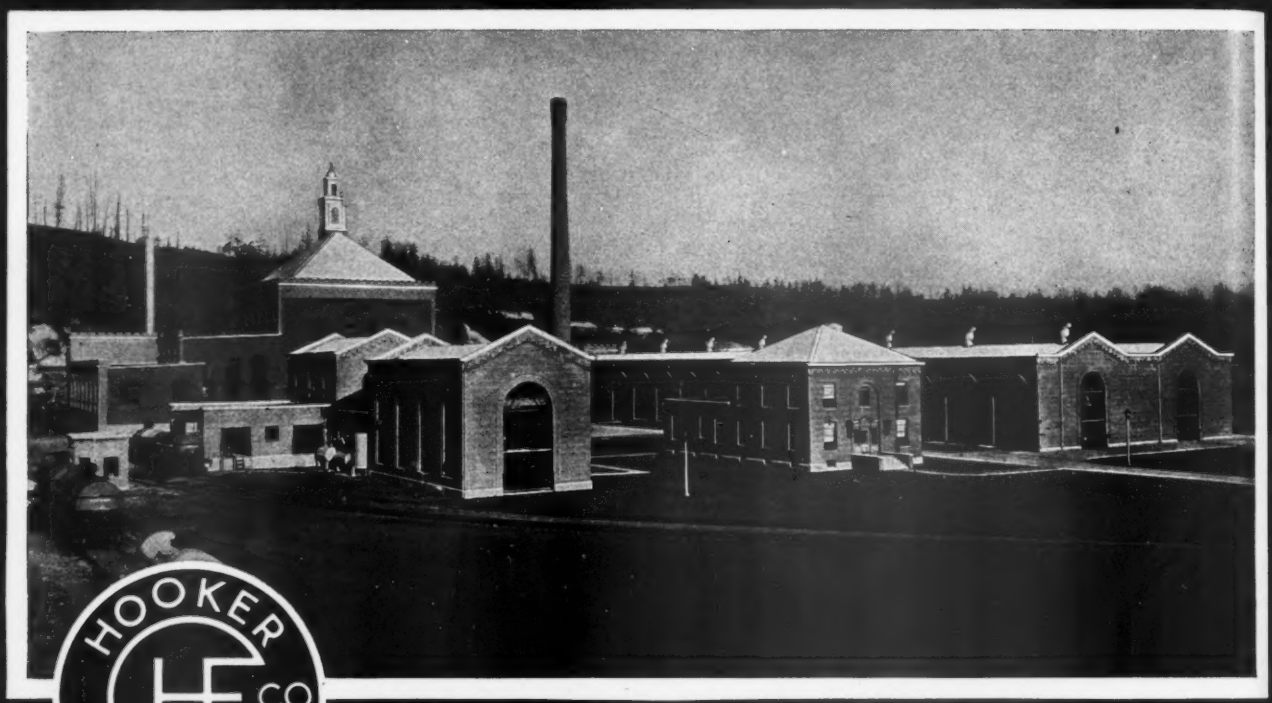
Data covering the average monthly quotations for imported paper and rayon pulp during the years 1936 and 1937 and during the first nine months of 1938 are given in Table No. XI, based upon figures extracted from the monthly trade journal of the Japan Paper Manufacturers' Association.

## Import Quotas for Wood Pulp

● Nothing definite has yet been done with regard to the grant of exchange permits for the 58,000 metric tons of rayon pulp for which import permits were issued on March 12, 1938. (These permits were granted late in November. —Editor.) On September 13, 1938, the Rayon Pulp Control Association decided again to petition the Finance Ministry to issue the necessary exchange permits. The "Osaka Mainichi & Tokyo Nichi Nichi," of Osaka, on September 15, 1938, carried a news item relative to this development and pointed out that Japanese importers of pulp are likely to be held responsible for breach of promises for non-fulfillment of contract. At Yen 400 a ton, the total value of the 58,000 tons of pulp is Yen 23,200,000, it was pointed out. Provided the damage for breach or promise is 10 per cent of the price, it would come to Yen 2,320,000. Even if the question of damage payments is ruled out, the Osaka paper asserted, the cancellation of the order is not advisable from a business standpoint, because the purchase price for further imports will be much higher than that of the present contracts. The Osaka paper concluded its report with the following observations:

● "Meanwhile, the rayon pulp stock in Japan is barely enough to cover the mills' taking. As it usually takes three months to reach Japan after the permit is granted, permits for pulp to be used in mill operations early in 1939 must be granted by the end of this month (September) at the latest. Otherwise, some mills will be forced to suspend operations, it is feared."

On October 16, 1938, the "Nikkan Kogyo," daily trade paper published at Osaka, reported that the aforementioned petition had been turned down by the Finance Ministry. It was intimated, however, that all or part of the 58,000 tons of rayon pulp may be licensed as part of the 1939 quotas and that some definite decision in this direction could be expected soon.



HOOKER ELECTROCHEMICAL CO

# CAUSTIC SODA
# LIQUID CHLORINE

Appreciating the diversified uses of Caustic Soda and Liquid Chlorine, the Hooker Company offers the technical services of an experienced engineering staff. Mills in the east and south as well as the west have used Hooker service to help solve their operating problems. At Tacoma, Washington, are maintained plant, laboratories, field staff and administrative personnel to serve the west coast industries.

WESTERN PLANT, Tacoma, Washington
Western Sales Office, Tacoma, Washington

EASTERN PLANT, Niagara Falls, N. Y.
Eastern Sales Office, 60 East 42nd St., New York

## HOOKER ELECTROCHEMICAL COMPANY

MURIATIC ACID - BLEACHING POWDER - MONOCHLORBENZENE - PARADICHLORBENZENE
BENZOATE OF SODA - BENZOIC ACID - BENZOYL CHLORIDE - BENZYL ALCOHOL
SULFUR MONOCHLORIDE - SULFUR DICHLORIDE - SULFURYL CHLORIDE - SALT
FERRIC CHLORIDE - ANTIMONY CHLORIDE

On November 9, 1938, the vernacular "Asahi Shimbun," Tokyo, reported that rayon manufacturers and importers of rayon pulp had held a meeting in Osaka on the previous day, the meeting being attended by representatives of the Department of Commerce and Industry and the Department of Finance. It was pointed out that Japanese rayon pulp importers had contracted for 296,000 tons of pulp for 1938 delivery, before the Government started to enforce the exchange control act and other regulations. With regard to the 58,000 tons covered by import licenses issued last spring, it was suggested that 13,000 tons be allowed importation before the end of 1938 and the balance of 45,000 tons before the end of April, 1939. The matter of payment apparently proved a stumbling block since it was intimated that importers should ask foreign suppliers for long term credits. The "Asahi" report concluded with the observation that some final decision is likely to be reached by the Government within a few days.

The "Japan Times & Mail," Tokyo, on November 9, 1938, carried the following report, which varies from the "Asahi" account:

• "The Government will allow importers to bring 58,000 metric tons of rayon pulp into Japan to cover requirements for the early part of next year, according to a report at the meeting of the Rayon Pulp Control Association held in Osaka Tuesday.

"It was also made known that the importers, in line with the idea of the Government, have decided to cancel the import contracts which had been entered into previously for 1938 shipments.

"The importers also reported that they have reached an understanding with foreign sellers regarding the cancellation of the contracts in question. Of the total shipments under the new permission, about one-third will be made within the balance of the present year."

The foregoing account states flatly that the Government has reached a decision to allow importation of the 58,000 metric tons. It is believed that the "Asahi" version of developments is correct in that no final decision has yet been reached. That something definite is to be expected in the near future is indicated and it is possible that the Bureau will be advised by radiogram before this report reaches Washington.

Concerning the supply and demand for rayon pulp during 1939, the "Nippon Kogyo Shimbun," Osaka, on September 23, 1938, released the following report:

• "Negotiations relating to the adjustment of the supply and demand of rayon pulp for the first quarter of 1939 are soon to start between the Ministry of Commerce and Industry and the Cabinet Planning Board. Because of an unexpectedly small amount of the carry-over from the present year, the imports for the period under review are expected to amount to a certain big volume.

"According to an expert estimate, the carry-over from the present year to the next year is expected to drive below the 10,000 ton mark to 6,000-7,000 metric tons. With the domestic production in the first three months of 1939 estimated to total some 40,000 metric tons, the domestic supply for the term will reach some 46,000-47,000 metric tons against the possible demand of 90,000 metric tons inclusive of the consumption in the rayon, staple fiber and cellophane industries.

"Under the circumstances, imports in the first quater are likely to reach 53,-000-54,000 tons. Experts of the Cabinet Planning Board apparently regard the imports to that extent inevitable. The Government license for the import of rayon pulp to that limit for the first quarter of 1939 is expected likely under the situation in the early part of next year."

The foregoing report is interesting but of doubtful importance pending decision with regard to the grant of exchange permits for the much-discussed 58,000 tons.

## Development of National Pulp Policy

• The only report available concerning the activties of the Kokusaku Pulp Kogyo Kaisha, or the National Pulp Industry Company, is a brief item released by Domei, the official Japanese news agency, and published locally on October 6, 1938. Acording to this report, the semi-official company scheduled to play a dominant part in Japan's drive for self-sufficiency in pulp, has decided to build a rayon pulp plant with annual capacity of 60,000 metric tons at Asahigawa, in the Kokkaido. It was added that the company will erect another plant capable of manufacturing 25,000 tons a year at Kokkeushi, also in the Hokkaido.

Estimates of production of rayon pulp in the Japanese Empire and "Manchukuo" have been announced by the Government, according to a report in the "Nikkan Kogyo," Osaka, reprinted by the "Japan Advertiser," Tokyo, on October 16, 1938. Production in the empire is expected to reach 490,000 tons in 1941, while this year's output is estimated at 106,000 tons and next year's at 224,000 tons. Details according to output by the company in 1938 and 1939 are given in Table No. XII.

According to this report, this year's production of rayon pulp by the four leading companies in Manchuria is estimated at 14,500 tons and next year's at 72,000 tons, to be turned out by six companies. The six concerns include Kangte Reed Pulp, Toho Pulp, Manshu Pulp, Nichiman Pulp, Toyo Pulp and Manshu Bean Stalk companies.

It is estimated by a reliable source that 1939 rayon pulp production will be 223,-000 metric tons in the Japanese Empire and in Manchuria. This estimate was arrived at by calculating output in the empire at 175,000 tons and output in Manchuria at 48,000 tons. Several other reports are available concerning the 1939 estimates for rayon pulp production, but since they vary widely from the two quoted above they are not detailed here. It may be noted, however, that one report gives an estimate of 245,000 metric tons.

Concerning the supply and demand position for rayon pulp, it was predicted that consumption in the rayon and staple fiber industries during 1939 will approximate 139,500 and 176,800 metric tons respectively, a total of 316,300 tons. In addition, several thousand tons will be needed for the cellophane industry. Stocks at the end of 1939 will be between 7,000 and 9,000 tons, acording to the same reliable source, and at present consumptive rates therefore it will be necessary to import at least 50,000 tons of rayon pulp before the end of 1938 or during the early part of 1939.

## New Companies, New Mills, Plant Extensions, Etc.—Japan Proper

• Compared with developments during 1937 and during the first half of 1938, remarkably few reports have appeared relative to new companies being projected in Japan Proper for the manufacture of wood pulp. The lone report available was published by the "Japan Times & Mail," Tokyo, on October 7, 1938, and stated that the Taiyo Pulp Manufacturing Company, Osaka, had decided to increase its capital from Yen 1,000,000 to Yen 2,000,000 for the purpose of increasing its output of rayon pulp. A new plant will be built soon with a productive capacity of about 10 tons a day.

## New Companies, New Mills, Plant Extensions, Etc.—Taiwan (Formosa)

• A bagasse pulp plant now under construction by the New Japan Sugar Company in Taiwan is expected to be completed in August, 1939, according to a trade report dated October 14, 1938. Test operations of the machinery is scheduled to take place during September to November inclusive and full activities are to be commenced in about December, 1939.

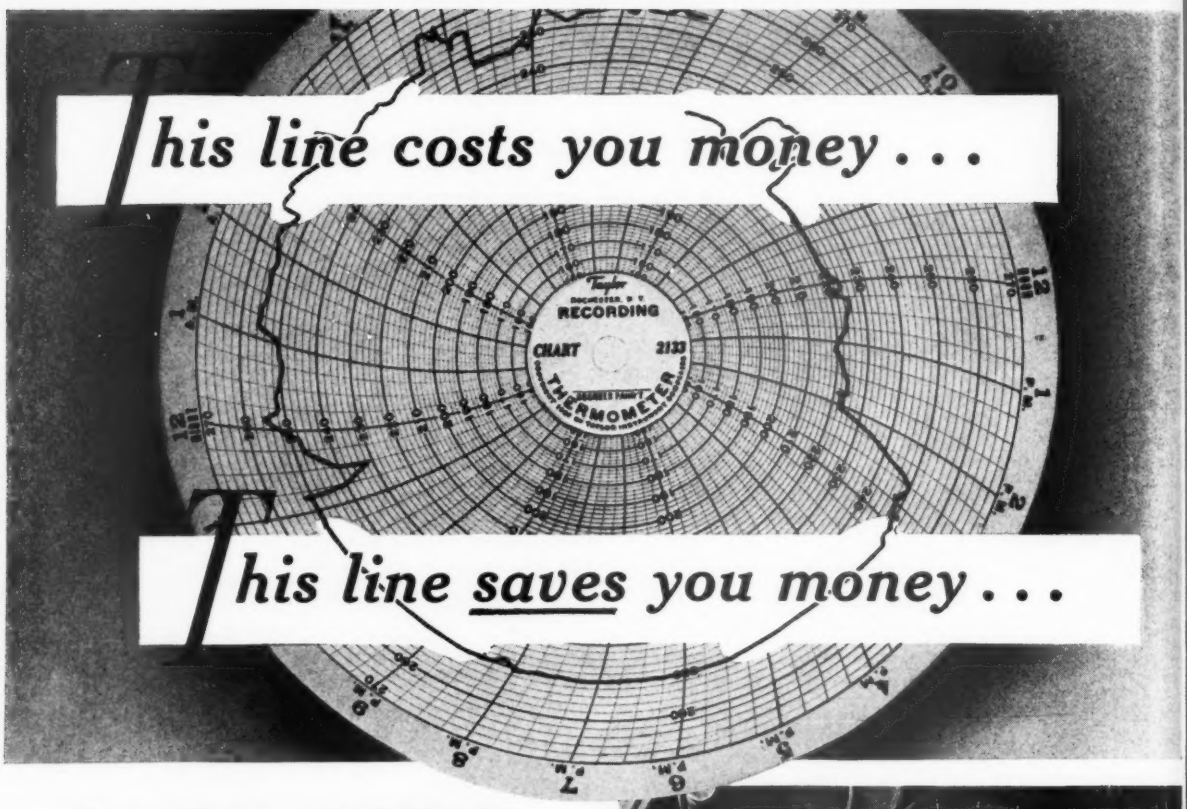
The Imperial Sugar Company has decided to take up the manufacture of bagasse pulp, following the lead of other sugar companies in Taiwan, according to a trade report dated October 27, 1938. The company has been supplying part of its bagasse output to the Formosan Industrial Company but has now decided to engage in bagasse pulp production itself. According to the present plan, the

## Table No. XII

### Output of Rayon Pulp, Japanese Empire and "Manchukuo"

(Estimates in Metric Tons)

| Companies | 1938 | 1939 |
|---|---|---|
| Oji Paper Manufacturing Co | 25,000 | 20,000 |
| Japan Rayon Pulp Co | 38,000 | 38,000 |
| Hokusen Paper Chemical Ind. Co | 23,000 | 30,000 |
| Hokuetsu Paper Pulp Co | 10,000 | 20,000 |
| Nisso Rayon Pulp Co | 5,000 | 20,000 |
| Nippon Pulp Industry | 5,000 | 20,000 |
| Kangte Reed Pulp Co | ------ | 5,000 |
| Sanyo Pulp Industry Co | ------ | 20,000 |
| Fukoku Rayon Pulp Co | ------ | 6,000 |
| Toyo Spinning Inuyama Co | ------ | 5,000 |
| Tohoku Pulp Ind. Co | ------ | 30,000 |
| Total | 106,000 | 224,000 |



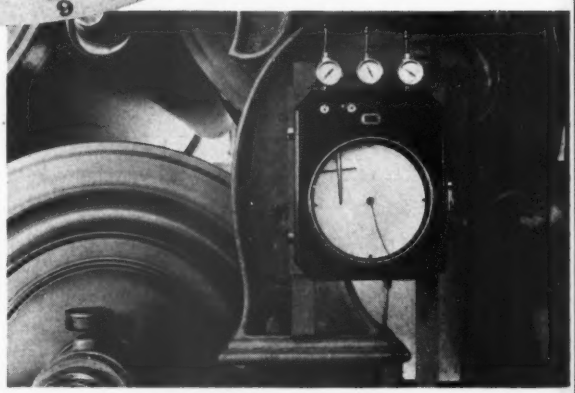

# AT THE DRYER,

## with Taylor Automatic Control, you can always be sure the temperature is best for your paper and your profit.

TAKE a look at the chart shown above. It tells a story which no paper manufacturer should ignore. The jagged line shows temperature fluctuations resulting from manual control at the dryer. It shouts "danger," is dangerous to stock quality and drying costs. The smooth line shows the results of Taylor Control of this process. It protects your paper and your profit.

With Taylor Automatic Control, you can always be sure that the exact drying temperature will be maintained for each type of stock. Taylor Control keeps under exact regulation the effects of many variables on temperature: variations in the weight of the paper, the freeness of the stock, the condition of the felts and the rolls. No manual system can control the effects which all these variables have on drying. Only automatic control such as Taylor offers can assure the precise temperature regulation which cuts drying costs and helps standardize quality.

Get the whole story about this money-saving control system. Let us show you just how the control bulb is placed at the dryer—an important new development that has reduced to a minimum the cost of maintaining a control system at this point. Send for the Taylor Representative, or write for a catalog. Taylor Instrument Companies, Rochester, New York. Plant also in Toronto, Canada. Manufacturers in Great Britain — Short & Mason, Ltd., London, England.



● Shown here is a Taylor Fulscope Recording Controller used in a large paper mill. This instrument, a "Dubl-Duty" unit system, controls both exhaust and high pressure steam with a single adjustment.

*Pacific Coast Sales Offices*—145 Mission St., San Francisco, Cal., and Central Bldg., Los Angeles. Also Terminal Sales Bldg., Portland, Oregon. Complete repair facilities for all Taylor Instruments are available in San Francisco. For your protection, have adjustments or repairs to Taylor Instruments made by Taylor.

Taylor

Indicating | Recording · Controlling

**TEMPERATURE, PRESSURE, FLOW** *and* **LEVEL INSTRUMENTS**

sugar concern will establish a subsidiary capitalized at between Yen 5,000,000 to Yen 10,000,000 with an annual output capacity of 10,000 metric tons of paper pulp.

### New Companies, New Mills, Plant Extensions, Etc.—Manchuria

● Our last report contained details concerning the projected establishment of a Manchurian national policy pulp firm to exploit the forests of the Hsingan mountain ranges. The projected concern, having the tentative name of the Hinganling Pulp Company and capitalized at Yen 100,000,000, would be capable of producing about 250,000 metric tons of pulp a year.

Apparently something developed behind the scenes which has made the establishment of this semi-official national policy company impracticable. This may be inferred from a report dated October 29, 1938, released by the "Nippon Kogyo," Osaka. According to this trade paper, three Japanese groups have decided to carry out separate enterprises for production of wood pulp in the Hsingan districts. The Oji Paper Manufacturing Company is said to be making preparations for erection of a plant at Taheiho with annual capacity of 130,000 metric tons, the enterprise to be controlled by a subsidiary capitalized at Yen 60,000,000. The Kanegafuchi Spinning Company reportedly plans to establish a Yen 30,000,000 subsidiary, to be financed jointly by the Kanegafuchi Spinning Company and Kanegafuchi Trading Company, with a plant projected in Chamasu having an annual productive capacity of 60,000 metric tons. The Japan Pulp Manufacturers' Association is also said to be interested in establishing a Yen 50,000,000 company and erect a plant at Yaheisin with annual productive capacity of 40,000 metric tons. The organizations expected to finance this venture include the Japan Pulp Manufacturers' Association, the Japan Rayon Manufacturers' Association and Japan Paper Manufacturers' Association.

Acording to this report, the three groups will invest an aggregate of Yen 140,000,000, the three plants scheduled to have annual productive capacity of 230,000 metric tons. The amount of capital to be invested and annual productive capacity resemble corresponding figures mentioned with regard to the projected establishment of the semi-official national policy concern, in which the Manchukukuo" Government was to invest 50 per cent of the capital. The latest development suggests that the "Manchukuo" Government is unable to make any investments at the present time.

Apparently, the matter of exploiting the forests of the Hsingan ranges for pulp manufacture is by no means a settled matter since it is believed that the question is still being discussed.

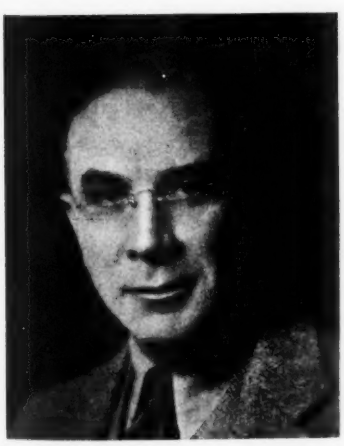
## Rounds-Burchett Form Pacific Coast Timber Service

● Evidence that the business of log production and marketing requires the methods of science for its success today is seen in the appearance on the Pacific Coast of the Rounds-Burchett Timber Service, with headquarters at Vancouver, B. C., offering those interested in timber operations the services and advice of trained specialists in almost every phase of timber production.

Its principals, Ralph M. Rounds and E. P. Burchett are both men of experience and standing in the industry. Son of the late D. C. Rounds, pioneer logging operator and founder of the Rounds & Porter Lumber Company, Wichita, Kansas, Mr. Rounds is equipped by long experience to deal with the practical problems of the lumber industry. Mr. E. P. Burchett was five years a member of the British Columbia Forestry Service, followed by fourteen years of diversified experience which gave him a first-hand knowledge of the whole logging field, ranging from engineering and estimating to the more abstract phases of control and marketing.

● "We are about to see a substantial increase in the value of standing timber," states Mr. Rounds. "In the past numerous properties have been ruined and financial loss suffered by owners due to unsound advice, one-sided contracts or poor supervision. Possibly in no other field are the consequences of haphazard, unscientific methods so grave, and the need for sound, expert knowledge and advice so acute, as in the lumber industry today. I believe a service such as we are offering will be welcomed not only by timber owners and operators, but also by banks, trust companies, financial institutions, insurance companies and all such organizations whose operations touch on the lumber industry in its many phases."

Among the services offered by Rounds-Burchett Limited are timber sales, estimating and valuation, purchase of timber, monthly market and statistical information, advice on liquidation of timber holdings, analysis of logging costs, logging plans and engineering, inspection of fire risks and hazard reports, estimates and reports on fire damage, and many others.



RALPH M. ROUNDS

E. P. BURCHETT

**Form the Rounds-Burchett Timber Service of Vancouver, B. C.**

## Port Angeles Asks That Park Be Restricted

● In a letter to Secretary of Agriculture Wallace, Thomas T. Aldwell, chairman of the Port Angeles, Washington, Chamber of Commerce's national park committee, asked cooperation to prevent extension of the newly created Olympic National Park boundaries to the west and south as six Olympic Peninsula pulp and paper mills depend for their operation upon an adequate supply of hemlock timber.

In his letter Mr. Aldwell said that hills to the west and southwest of existing boundaries are covered 85 per cent with pulp wood species; that the industry's requirements are now 500,000,000 feet per year; that the industry has $48,000,000 invested with a $6,000,000 annual payroll, and that it is imperative for continued operation that the present timber be conserved for the industry on a sustained yield basis.

The bill increasing the size of the park provides that a conference be held between Secretary Wallace, Secretary of the Interior Harold Ickes and Governor Clarence D. Martin before boundaries are changed.

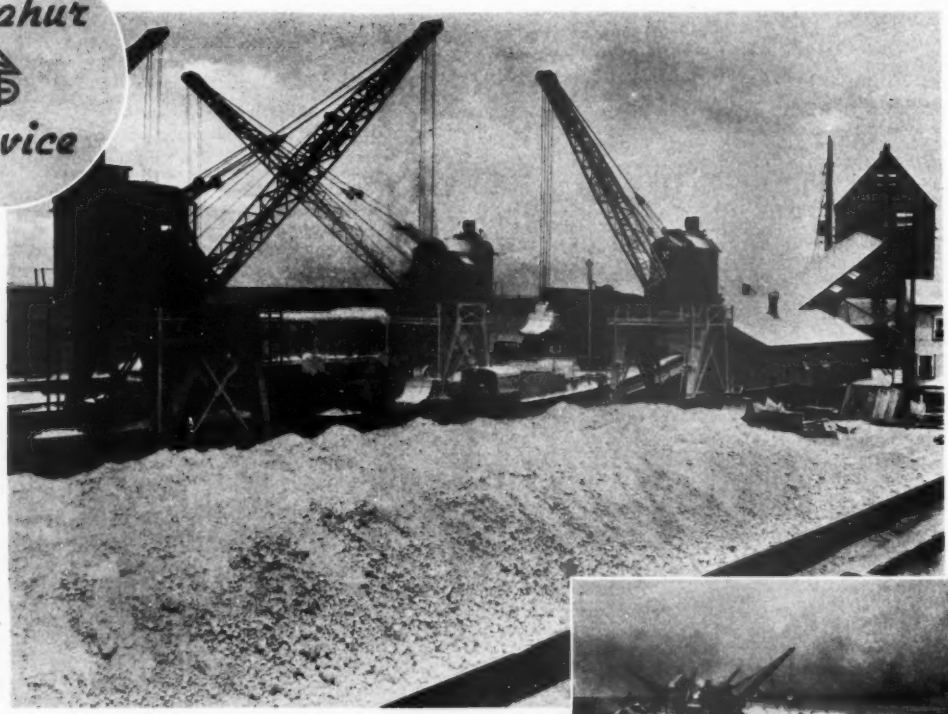
## West Linn Men Awarded Service Pins

● At the monthly cost meeting held February 9 at the Crown Willamette mill at West Linn, Ore., resident manager Clarence Bruner presented 21 service pins to employees who had been with the company for from five to 20 years. There were two 20-year pins, four 15-year pins, seven 10-year pins and eight 5-year pins.

## Bob Nevins Dies in Vancouver

● Bob Nevins, one of the Crown Zellerbach pensioners and old time employee of the company, passed away January 25 at Vancouver, B. C. He had been retired for some years. Mr. Nevins was formerly employed at Ocean Falls, and was well known to many people in the industry.

Sulphur Service



# RELAY STATION *for* SULPHUR

Our shipping point at Galveston is a relay station. Here stocks of Sulphur are maintained at all times to assure cargoes for the ships carrying supplies of this basic raw material to major ports on both coasts.

Process plants need never be without their supplies of pure Sulphur, a product without arsenic, selenium or tellurium.

• • •

Hand in hand with production and transportation is Research and from Texas Gulf's research activities have come many useful products. One of the latest is the casting of sulphur pipe.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Newgulf and Long Point, Texas

# Trade Talk

of Those Who Sell Paper in the Western States

## Are Printing Apprentices Trained to Know Paper?

● Does the paper trade know that even in this year of Grace, 1939, the printer has not been taught to regard paper as the ESSENTIAL raw material of his craft? The young printer learns to set his type, he learns to work and care for his machines, he learns something of his type metals and inks, he even learns from the artist and the designer to lay out his print artistically; but what—oh, what?—does he learn in his apprentice years of paper?

Does the young printer learn the difference between good paper made in his own country and the flashy cheap stuff imported (with subsidies and what not) to capture an unwary market? How many schools of printing in this country teach their pupils even the rudimentary facts about paper? In how many examinations, by the passing of which printers are certified as masters of their craft, is anything but a cursory question or two devoted to paper?—from "The World's Paper Trade Review," for January 13, 1939, published in London, England.

## Paper Mill Men's Club Plans Two Affairs

● Plans were laid early in February for a noon luncheon meeting of the Paper Mill Men's Club of Southern California and later a Dividend Party. The dates for these events as announced by George Wieman, president of the club, were February 14 and March 9, respectively. The Luncheon meeting will be held at the Los Angeles Athletic Club. The Dividend Party which will include a golf match in the afternoon, dinner and entertainment during the evening will be held at the California Country Club. Neil Sinclair is chairman of the luncheon meeting and Frank Philbrook of the Dividend Party. Both meetings will be for the membership only.

## Wilson Paper Moves to Larger San Francisco Quarters

● The Wilson Paper Company, a branch of a Los Angeles concern, has moved its offices and warehouse from Fremont Street, where it was located for a number of years, to 512 Second Street, San Francisco.

The move made to much larger and commodious quarters—the company now occupying a four-story building, with approximately 15,000 square feet and with spur track facilities.

A. J. and Charles Wilson are the owners of the company, which specializes in the sale of wrapping and gummed paper and twines. Sol Sternberg is San Francisco manager of the company.

## Arthur Towne to Attend National Paper Trade Meeting

● Arthur W. Towne, manager of the San Francisco and Northern California division, Blake, Moffitt & Towne, left February 19 for New York to attend the National Paper Trade convention. He planned on being gone about three weeks.

## Crown Zellerbach Has Exhibit at Exposition

● When the Golden Gate International Exposition opened February 18 at Treasure Island in San Francisco Bay, the throng of visitors to the Hall of Science were thrilled by the exhibit of the Crown-Zellerbach Corporation.

The exhibit consists of dioramas and murals. The story of paper's part in history is told in the dioramas—all important events in history in which paper played a part are depicted.

The murals are oil paintings by Evelyn Rockwell, well known artist, and they portray the story of paper from the original logging operations until it reaches the consumer. An attendant is on hand at all times to give information regarding the company and paper, and a printed souvenir will be given away gratis.

The company is also participating in the issuance of poster stamps, commemorating the exposition.

## Pilz Visits In East

● William J. Pilz, vice-president and manager of the Everett Pulp & Paper Company, Everett, Washington, spent several weeks in the East the latter part of January and early in February.

## DuPont Makes 19th Price Reduction on Cellophane

● During December the "Cellophane" Division of the du Pont Company announced another price reduction on "Cellophane" cellulose film—the 19th made since domestic manufacture was started in 1924.

● According to the announcement, this reduction was made possible by the present and anticipated production economies and increased usage of "Cellophane" in a number of new directions, including wraps for biscuits, frozen foods, poultry and cheese, as well as expanded usage in established industries such as baked goods, candy and meats.

"Cellophane" is manufactured of dissolving wood pulp.

## Paterson Parchment Holds Sales Meeting

● A review of 1938 and plans for the new year were part of the program of the annual sales meeting for the Pacific Coast sales force of the Paterson Pacific Parchment Paper Co., held in San Francisco during the week ending Jan. 14.

Following the sales meeting a golf tournament was held, and a banquet at one of San Francisco's leading hotels was enjoyed by all. W. J. Gray, general manager of the company, presided at the meeting.

## Easterners Visit Coast Distributors

● J. L. Sennsenbrenner, Kimberly-Clark Corporation, Neenah, Wisconsin, was a Pacific Coast visitor last month.

W. L. Garrity, Munising Paper Company, Munising, Michigan, was a recent San Francisco and Pacific Coast visitor.

R. X. Pfiffner, Whiting-Plover Paper Company, Stevens Point, Wisconsin, was on the Coast last month.

Wilbur T. Eldridge, Hammermill Paper Company, Erie, Pennsylvania, specializing in the promotion of the sale of safety paper, will soon be on the Pacific Coast, and will travel from San Diego to Seattle in the interests of safety paper.

## Hugh Peat In New Offices

● Hugh Peat, executive secretary, Pacific Paper Box Association, is back at his desk after a three week's illness.

And by the way, the desk is in a new location. Offices of the association have been moved from the Underwood building in San Francisco, where they have been for a number of years, to the Flatiron building, 544 Market Street.

## Horton to Hawaii For Everett Papers

● John E. Horton, in charge of stationery sales in the Northern California office, Everett Pulp & Paper Company, San Francisco, left late last month for his annual trip to the Hawaiian Islands. He'll be back in a month.

## Colton's Daughter To Be Married

● Wedding bells will soon ring out for Miss Marian Colton, only daughter of Louis A. Colton, vice-president, Zellerbach Paper Company, San Francisco.

The charming Miss Colton will be married some time in April to Willard S. Levy, Young San Francisco businessman.

## San Francisco Box Makers Hold Annual Banquet

● The paper box manufacturers of San Francisco held their annual banquet and golf tournament on December 8th at the Lake Merced Golf and Country Club.

The eighty-six men who attended participated in a golf tournament during the afternoon. The golfers were divided into four flights and the winners were as follows: First Flight, W. S. Shattuck with a net of 65; W. D. Higgins, 71; R. E. Kimball, 75. Second Flight: Al Church, 71; Gus Trost, 74; W. H. Thomas, 75. Third Flight: W. Schulte, 72; W. H. Patterson, 72; M. Devers, 76; D. L. Jefferies, 76. Fourth Flight: B. Hoffschneider, 65; L. Grosjean, 73; H. Campbell, 74.

At the banquet which followed the turnament J. C. Meyerstein, attorney for the Pacific Coast Paper Box Manufacturers' Association, served as master of ceremonies. W. J. O'Donnell, manager of the Fleischacker Paper Box Company of San Francisco, welcomed those present.

The long list of prizes were awarded by a drawing. This was followed by an interesting entertainment program.

The committee arranging the tournament and banquet consisted of Howard A. Campbell, chairman; Fred C. Kewell, and R. O. Comstock.

## Harold Zellerbach Attends Paper Trade Meeting

● H. L. Zellerbach, president, Zellerbach Paper Company, San Francisco, left February 8 to attend the convention of the National Paper Trade Association in New York. Following the convention Zellerbach will spend a month vacationing in France and England, returning to his desk some time in April.

## Victor Hecht Takes Winter Vacation

● Victor Hecht, vice-president, Zellerbach Paper Company, San Francisco, is back at his desk after a mid-winter vacation in Southern California.

## Fights Blizzard in Southern California

● Within a short jump of Mexico and as near that hottest spot in the United States, Imperial Valley, Kenneth R. Ross while en route from San Diego to El Centro braved a blizzard, "quite like old times in the Northwest," Ken remarked. Not only was it necessary to drive through snow six inches thick on the highway to El Centro but en route to Los Angeles from El Centro after passing Palm Springs he encountered another snowstorm.

## Crown Zellerbach Men Visit Northwest Mills

● A. L. Bennett, comptroller for the Crown Zellerbach Corporation, and J. N. Mulkey of the San Francisco office, spent several weeks in the Northwest, visiting the company's mills and various offices. They returned to California about the first of February.

## Graham Paper Holds Northwest Sales Meeting

● Sales representatives of the Graham Paper Company, agents for the St. Helens Pulp & Paper Company, met at Portland February 6th to 9th for their annual sales conference.

Present at the meeting was Frank Philbrook of Los Angeles, C. E. Swick, John Hubbard and Sherwood Hancock of San Francisco, G. J. Long of Seattle, E. G. Kerwin of St. Louis, E. D. Cornelison from Salt Lake City, Ralph Bateman representing the Arizona territory, Paul Bauer of Portland and C. E. McKillop, Portland manager.

## Sensenbrenner Comes West

● J. L. Sensenbrenner of the Kimberly-Clark Corporation, Neenah, Wisconsin, a son of F. J. Sensenbrenner, president of the company, recently visited the Pacific Coast and looked over some of the western mills. He stopped at Spokane, Seattle, Portland, Camas, and then went on to California, in company with C. Francis Jenkins of Los Angeles, western representative of the company.

Until about a year ago, Mr. Sensenbrenner was manager of the company's mill at Niagara Falls, N. Y., but is now located in the firm's main offices.

## Crown Northwest Salesmen Meet

● The annual Crown Zellerbach Corporation sales meeting of salesmen and mill managers of the Pacific Northwest territory was held in Portland January 27 at the Arlington Club.

Frank N. Youngman, vice president of Portland, was host at a dinner given at the club for the 35 men present.

## Olmsted and Ostenson Attend Waxed Paper Meeting

● Fred Olmsted, Camas technical supervisor, and H. E. Ostenson, Camas paper mill superintendent for Crown Willamette, recently made a fast trip to Oakland, Calif., where they attended the sales meeting of the Western Waxed Paper Company on January 27 and 28.

## New Zealand Restricts Canadian Paper

● Under New Zealand's new policy of restricting imports with a view to strengthening the country's internal economy, severe restrictions are placed on several commodities from Canada, including wrapping paper, but newsprint is not affected.

## Sam Abrams Recovered From Illness

● Sam Abrams of the U. S. Paper Company suffered a severe attack of influenza during January which confined him to his bed for several days. He is recuperated now.

## Ady Receives 30-Year Pin From Zellerbach Paper

● J. C. "Clem" Ary, Oakland manager, Zellerbach Paper Company, is the proud recipient of his 30-year pin.

## Dairy Asks Injunction Against Chicago in Paper Container Fight

● It was reported by the press services early in February that the Fieldcrest Dairies, Incorporated, of Chicago had asked for an injunction to prevent the City of Chicago from interfering with the sale of milk in paper containers. The complaint was directed against the city, the board of health and Dr. Robert A. Black, acting president of the board.

In their bill of particulars the Fieldcrest Dairies, Incorporated, pointed out that they are now selling milk in paper containers in forty-six villages and cities near Chicago and asserted that paper containers are in common use in all the large cities of the United States except Chicago, but including New York, Detroit, Cleveland, San Francisco, Los Angeles, and Washington, D. C.

The dairy charged that the refusal of health authorities in Chicago to permit use of the containers was "unreasonable, capricious, invalid and in violation of the constitution of Illinois and the constitution of the United States and without any basis from a health and sanitary standpoint."

## Hammond Visits Western Wax in L. A.

● A. S. Hammond, general manager of the Gumming Division of the Western Waxed Paper Company, was a Los Angeles visitor for several days the latter part of January.

## Test for Linting of Teletype Paper

● The paper section of the National Bureau of Standards believes that the wax pick test may be used satisfactorily to determine whether teletype paper will lint too much in automatic teletype machines where messages are recorded directly on the paper. The investigation was made at the request of a Government organization which experienced operating difficulties with teletype machines because of excessive linting of some papers. This results from fibers picking off of the surface of paper having poor formation.

Difficulty of this kind is experienced more or less with printing papers in general and the wax pick test is now used considerably for such papers. It is a part of the specification for mineral coated papers used by the Government Printing Office. It consists in affixing a stick of sealing wax to the surface of the paper, then noting whether the surface remains intact when the stick is pulled off. Series of wax sticks having graduated degrees of adhesiveness are available for the purpose. They are numbered successively in increasing order of adhesiveness, starting with 1. In this particular case, teletype paper which linted excessively withstood only a No. 8 wax while satisfactory paper withstood a No. 10 wax.

## Jack Williams Dies in Los Angeles

● Jack Williams, partner-owner in the Crystal Paper Service Company of Los Angeles, died suddenly the latter part of January.

"NON-USERS ARE THE LOSERS"

FINISH AND TRIM

TENAX FELTS

AMONG APPA FRIENDS

Gratifying when we check the membership of the American Paper and Pulp Association to note the large number using TENAX FELTS. That's no happenstance! Steadily through the years, their use has increased as their reputation for Low Operating Costs and Better Finish has spread from mill to mill.

*"Non-Users Are the Losers"*

LOCKPORT FELT COMPANY

NEWFANE, N. Y.

*Pacific Coast Representative:* ALAN C. DUNHAM, Portland, Ore.

## Stephenson Awarded TAPPI Gold Medal

● The Executive Committee of the Technical Association of the Pulp & Paper Industry has voted unanimously to award the 1939 TAPPI gold medal to J. Newell Stephenson, editor of the Pulp & Paper Magazine of Canada and of the textbooks on pulp and paper manufacturing published by the industry's Joint Textbook Committee.

The TAPPI medal is awarded annually to an individual who has made outstanding contributions to the technical advancement of the pulp and paper industry. The Executive Committee states that Mr. Stephenson has contributed much through his editorship of the textbooks which it believes to be the best accumulation of information by any industry.

Mr. Stephenson was born in New Rochelle, New York, in 1882 and is a 1909 graduate of the Massachusetts Institute of Technology in chemical engineering. He served on the faculty of Rose Polytechnic Institute from 1910-1913 and was one oft he organizers of the pulp and paper course at the University of Maine (1913-1916). Since 1917 he has been editor of the Pulp & Paper Magazine of Canada and of the industry's textbooks. Since 1922 Mr. Stephenson has been principal of the Institute of Industrial Arts at Gardenvale, Quebec.

He is chairman of the advisory committee of the Provincial Technical and Paper Making School of Three Rivers, P. Q., and is a member of the Technical Section, Canadian Pulp and Paper Association, the Technical Association of the Pulp & Paper Industry and the Montreal Section of the Society of the Chemical Industry.

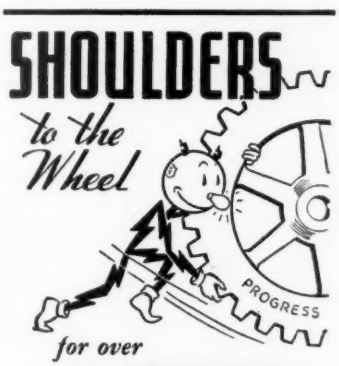
## Bob Bundy Breaks Arm

● Robert E. Bundy, manager of the Port Angeles mill of Fibreboard, Inc., suffered a damaged arm at the plant early in February. A fire broke out in the Chas. Nelson Lumber Co. mill next door to Fibreboard. Mr. Bundy ran to look after protection of the Fibreboard property, stumbled over a fire hose and injured his arm and shoulder. He has since been wearing a cast on it.

N. M. Brisbois, general operating manager for Fibreboard, Inc., spent some time at the Port Angeles mill early this month.

## Roy Young Visits Northwest Mills

● Roy O. Young, assistant vice president of the Crown Zellerbach Corporation, with headquarters in San Francisco, spent a week in the Portland office and at mills in the vicinity early in February.




for over

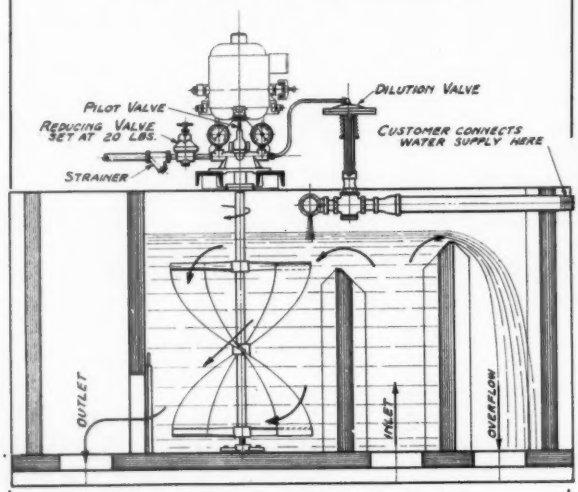
50 YEARS

HALF A CENTURY is a long time, but for a longer time than that I've been in there pitching for human progress and high living standards. Say, just give me a chance. I'll show you what real cooperation is. When it comes to solving tough problems, electricity is great stuff and it has made me thousands of friends. I can increase the efficiency in your factory or business and promote greater comforts and convenience in the school and home. For helpful advice just call one of my Representatives at the nearest Puget Power office.

Reddy Kilowatt

PUGET SOUND POWER & LIGHT COMPANY

# CONSISTENCY CONTROLLER




(U. S. & Foregn Patents Applied For)

C-E consistency controllers now operating in Pacific Coast mills are maintaining uniform consistency within 1/10 of 1 per cent, as guaranteed.

Simple in adjustment.

Free from mechanical troubles.

Rugged self-contained mechanism.

Cost surprisingly low; easy to install.

When installed with stuff box on pulp or paper machine, will accurately maintain basis weight of sheet.

*Manufactured by*

**CONTROL EQUIPMENT CORPORATION**

BUFFALO, N. Y.

*Sold by*

MACHINE CLOTHING — EQUIPMENT — FOR PULP AND PAPER MILLS — SUPPLIES — RAW MATERIALS

**Pacific Coast Supply Co.**

REPRESENTING THE FOREMOST MANUFACTURERS OF SUPPLIES

PORTLAND SEATTLE SAN FRANCISCO

EVENTS OF WORLD significance transpiring in the Orient are heralded to the western world before the revolving earth can catch up with the clock. That's the speed of modern newspapers.

To produce the newsprint required by the daily press of the United States alone requires the timber grown through centuries on vast areas of virgin forests. To convert this timber into newsprint fast enough to feed the presses demands incredible speed at the wet end of the paper machines where the water is extracted from the web.

Because Hamilton Felts do this essential work more uniformly, more thoroughly, more economically and at higher speeds, Hamilton Felts are the standard equipment with leading newsprint mills.

From the finest tissues to the heaviest board, there is a Hamilton Felt that does your work better, faster and at lower cost.

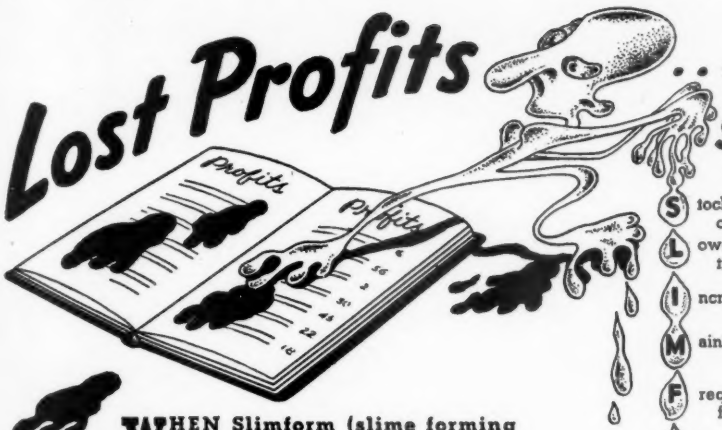
**SHULER & BENNINGHOFEN**

HAMILTON, OHIO

Miami Woolen Mills, *Established 1858*

**Hamilton Felts**

# Lost Profits ... MAP THE SLIMFORM TRAIL




**S**tock losses—bacterial decomposition and reworking of stock

**L**owered Quality—slime spots—pin holes—objectionable odors

**I**ncreased Costs—in water—heat—labor—chemicals

**M**aintenance Troubles—blinded wires—plugged felts

**F**requent Clean-ups—slime breaks—poor sheet formation

**O**bstruction of Lines—stock and white water lines

**R**ecirculation Difficulties—slime growths in recirculated systems

**M**echanical Strain on felts and wires—shortened useful felt and wire life

**WHEN Slimform (slime forming bacilli) infest a paper mill, profits disappear. Not only lowered quality, but also increased production costs and actual loss in paper making materials result from paper mill slime. BUT—You can eliminate slime by the same method used in over 200 leading mills today. Controlled application of chlorine and ammonia will banish slime from your mill—and at a cost of not more than from 1½ cents to 6 cents per ton of product.**

**Write today for Research Publication #327 "Slime in Paper Mills—Its Origin and Prevention."**

WALLACE & TIERNAN CO. INC.

*Manufacturers of Chlorine and Ammonia Control Apparatus*

NEWARK, NEW JERSEY · Branches in Principal Cities

OTHER W&T CONTROL SERVICES:

Automatic pH Control Dry Chemical Feeders Bleach Plant Equipment

Testing Instruments for Chlorine and pH

# SULPHUR

**Freeport Sulphur Company**

**The Chanin Bldg., New York City**
**122 East 42nd Street**

**... Mines ...**

**Freeport, Brazoria County, Texas**

**Grande Ecaille, Plaquemines Parish, Louisiana**

***Pacific Coast Sales Agents:***

**Balfour, Guthrie & Company**

**Seattle, Tacoma, Portland, San Francisco, Los Angeles and Vancouver, B. C.**

# SULPHUR

# YOU GET ALL THREE

- QUALITY
- SERVICE
- ECONOMY

WHEN YOU SPECIFY

**PLANT**

*Insulation & Packing*

**PLANT**

**RUBBER & ASBESTOS WORKS**

**San Francisco, Oakland, Los Angeles, Wilmington**

**ASBESTOS SUPPLY COMPANY**

Distributors and Applying Contractors

**Portland Seattle Tacoma Spokane**

"Trouble-Free"
ESCO STAINLESS

GLOBE, ANGLE and BLOW VALVES
used in the manufacture of sulphite pulp

*Our Engineers Will Gladly Serve You*

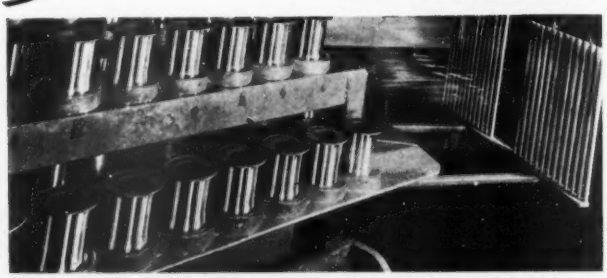
**ELECTRIC STEEL FOUNDRY CO.**
Portland, Oregon Seattle, Washington

California Cotton Mills Co.
OAKLAND, CALIF.

Selection of a felt design of proper porosity to meet your machine conditions, will enable you to get the full benefit of the exceptional life built into "Imperi" dryer canvases through the use of highest quality cotton.

Pacific Coast Supply Co.
SAN FRANCISCO PORTLAND SEATTLE

Small WIRES



ENERGIZED!

**EACH STRAND will take its place in EASTWOOD Weaves, to share a part in wear resistance. ★ Under the EASTWOOD process of wire conditioning, these research-proven alloys challenge mill conditions. ★ PERFORMANCE is the real measure of EASTWOOD WIRES. They reach the ultimate in service output and uniformly superior FINISH.**

***For more than sixty years "EASTWOOD" has set the Standard of Comparison.***

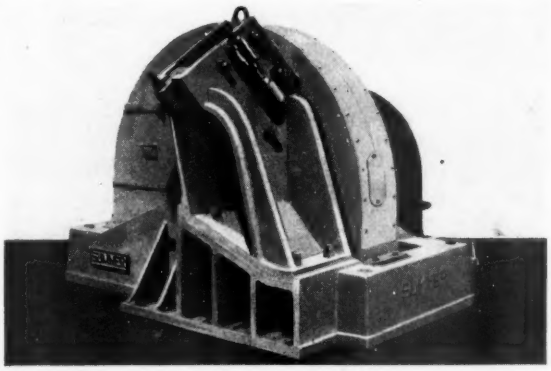
**EASTWOOD-NEALLEY CORP.**
At Belleville, N. J. Since 1877
Pacific Coast Sales Agents
PACIFIC COAST SUPPLY COMPANY • San Francisco, Portland, Seattle

Do you know the news of the industry on the Pacific Coast? To read PACIFIC PULP & PAPER INDUSTRY is to be informed. Every issue bristling with news. Subscribe now. U. S. and Canada, $4.00 per year.

PACIFIC
PULP & PAPER
INDUSTRY

71 Columbia St., Seattle, Wn.

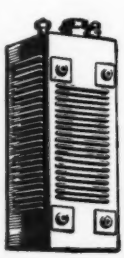
APPLETON WIRE WORKS, INC.
The ORR FELT & BLANKET CO.
ASTEN-HILL ASBESTOS DRYER FELTS
AMERICAN WRINGER CO., INC.
WALTER S. HODGES
paper machine clothing & rolls
-SINCE 1926-
Pacific Building PORTLAND, OREGON Telephone Beacon 9354



SUMNER IRON WORKS
EVERETT, WASH.
*The last word in*
CHIPPERS
42 MACHINES IN THE LAST 7 YEARS
SIZES: 51", 66", 72", 84", 110"

The DRAPER Felt
DRAPER BROTHERS COMPANY
CANTON, MASS.

Edison



NICKEL-IRON-ALKALINE BATTERIES
The preferred power battery for industrial trucks in the pulp and paper industry.
Edison Storage Battery Supply Company
Main Office & Factory: West Orange, N. J.
Seattle San Francisco Los Angeles

WESTERN SPEED REDUCERS
GEARS From Gear Specialists
Western Gear Works
SEATTLE, WASH.
Associated with PACIFIC GEAR & TOOL WORKS Incorporated
SAN FRANCISCO PORTLAND EL PASO LOS ANGELES

# Waterbury Felts

are made by

H. Waterbury & Sons Co.
ORISKANY, N. Y.

Represented by: F. P. Wilder, New Heathman Hotel
Portland, Oregon

# Merrick Feedoweights

Feed or Proportion
any material accurately by weight

MERRICK SCALE MFG. CO., Passaic, New Jersey
Irving R. Gard & Company, 908 Lowman Bldg., Seattle, U. S. A.

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

J. O. ROSS ENGINEERING COMPANY
350 Madison Avenue, New York, N. Y.
2860 N.W. Front Avenue, Portland, Ore.
E. G. DREW—Pacific Coast Representative

# Appleton felts MAKE GOOD PAPER

CHAS. M. SERVER 209 TERMINAL SALES BLDG. PORTLAND, OREGON

APPLETON wires are good wires

## A PLUS in Lubrication?

*Yes, it's Shell's "Invisible Element"* . . . a combination of Shell's world-wide resources in laboratories and refineries; decades of experience and research by Shell's engineers and scientists. It is the aim to make lubrication more efficient, more economical for industry.

SHELL INDUSTRIAL LUBRICANTS

USE BUNKER HILL PRODUCTS PURE LEAD - LEAD ALLOYS LEAD

NORTHWEST LEAD COMPANY
SEATTLE
SAN FRANCISCO LOS ANGELES

WEYERHAEUSER
SULPHITE
BLEACHED UNBLEACHED

PULP —

Perkins-Goodwin Company
Established 1846
30 Rockefeller Plaza, New York Suite 3605

— PAPER

HESSE-ERSTED IRON WORKS
PULP and PAPER MILL MACHINERY
816 S. E. Taylor PORTLAND, ORE.

ROUNDS BURCHETT Ltd.

TIMBER SERVICE
*RALPH M. ROUNDS*
*President*
*E. P. BURCHETT*
*Managing Director*

*Reliable*
# ADVICE
FOR TIMBER HOLDERS

. . . and for Logging Operators, Banks, Trust Companies. Financial Institutions, and Insurance Companies interested in securing a specialized, complete and up-to-date sales . . . management . . . technical and general counsel on all phases of the Timber and Forest Products Industry.

MONTHLY TIMBER INDUSTRY DIGEST AND STATISTICAL REPORT MAILED DIRECT *upon request.*

*Address all Communications to:* E. P. BURCHETT, *Managing-Director*
ROUNDS-BURCHETT LTD. TIMBER SERVICE
INNS OF COURT BUILDING - - - VANCOUVER, CANADA

# AIRPLANE Photographic SURVEYS

Are especially useful in preliminary work, showing Sites and Stands of Timber, Etc. Write us.

Photo Maps to Scale, Views

BRUBAKER AERIAL SURVEYS
412 McKay Building, Portland, Oregon
ATwater 1903

## STANLEY J. SELDEN
INDUSTRIAL ENGINEER

INDUSTRIAL PLANTS
PULP AND PAPER MILLS

•

319 PERKINS BUILDING PHONE MAIN 8406
TACOMA, WASHINGTON

## O. C. SCHOENWERK
Consulting Engineer

2701 COLUMBUS BLVD.
CORAL GABLES, FLORIDA

Pulp and Paper Mill
Design — Construction

## Cavin, Marshall and Barr
***CONSULTING ENGINEERS***

A Firm of West Coast Engineers, Experienced in PACIFIC COAST Problems of Mill Design, Operation and Supervision of Construction.

HAROLD D. CAVIN HARRY L. MARSHALL
CHARLES M. BARR

1215 Exchange Building, Seattle, Washington

## Hardy S. Ferguson & Co.
***Consulting Engineers***

200 Fifth Avenue, NEW YORK CITY

Hardy S. Ferguson.....Member A.S.C.E., A.S.M.E., E.I.C.
Moses H. Teaze.....Member A.S.M.E., E.I.C., A.S.C.E.

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

Pulp and Paper Mills and other Industrial Plants.
Steam and Hydro-electric Power Plants
Dams and other Hydraulic Structures.

## L. A. DeGUERE
*Mill Architect and Engineer*
WISCONSIN RAPIDS, WIS.

***PULP and PAPER MILLS***

Ground Wood, Sulphite, Sulphate, Surveys, Estimates and Reports — Water Power Development

Reference—A long list of successful plants in various parts of U. S. and Canada

***Over 25 years actual experience in designing and building of mills.***

## CHEMIPULP PROCESS INC.
**CHEMICAL PULP MILL ENGINEERS**

*500 Woolworth Building, Watertown, N. Y.* — *3311 First Avenue South, Seattle, Wash.*

*Associated with CHEMIPULP PROCESS LIMITED, Montreal, Que.*

## Chromium Corporation of America
CRODON
*The Chrome Plate*
TRADE MARK REG. U. S. PAT. OFF.

Charles H. Belvin, Jr.
4651 N. E. 36th Ave.
Portland, Oregon

NEW YORK WATERBURY CLEVELAND CHICAGO

## GEORGE F. HARDY
*Consulting Engineer*

305-309 Broadway, NEW YORK CITY, N. Y.
MEMBER—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.
Consultation—Reports—Valuations—Estimates—Paper and Pulp Mills—Hydro-Electric and Steam Power Plants—Plans and Specifications.

## PULPWOOD CLEANING MACHINES
★ ★ ★ BARKERS ★ ★ ★
KNOT BORING and ROUTING MACHINES
CONCAVE KNIFE AND BROUTING BIT GRINDERS
★ ★ ★
STETSON-ROSS MACHINE CO.
SEATTLE, WASHINGTON

## Roche Harbor Lime and Lime Stone—are standard for good pulp

For Better Bleach
For Better Filler
For Better Tower Use
For Less Impurities

Roche Harbor is the dean of the industry and is noted for unlimited supply, superior quality and unexcelled service.

**Roche Harbor Lime and Cement Co.** Paul H McMillin, Pres. Roche Harbor, Wash.

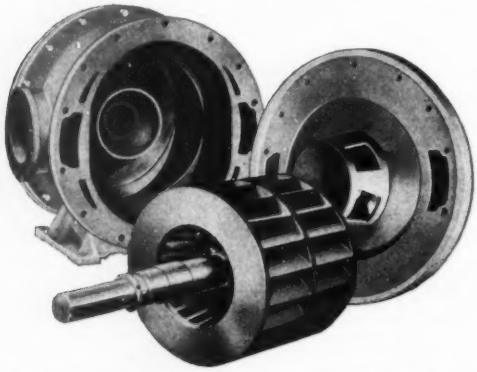
## *Read* Pacific Pulp & Paper Industry

to keep informed of the news of the Pacific Coast industry.

U. S. and Canada $4 per year.

PACIFIC PULP & PAPER INDUSTRY
71 Columbia Street Seattle, Wash.

# SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

*Wires*
THAT ~~TELEGRAPH~~
QUALITY of PRODUCT

• Quality both ways—quality *wires* that make for quality *paper* Uniform wires. Wires with seams that, thanks to tireless research, come close to perfection. Seams which the specialization of over three decades has refined to meet your exacting requirements.

THE LINDSAY WIRE WEAVING COMPANY
14025 ASPINWALL AVENUE
CLEVELAND • OHIO

Lindsay WIRES
FOR PAPER MILLS

SLITTERS QUICKLY SPACED
CAMACHINE 18
On CAMACHINES, respacing of slitters is quickly done. Only one cutter for each cut, not two as in the case of overlapping shears.
CAMERON MACHINE COMPANY
61 POPLAR ST. - - - - BROOKLYN, N. Y.


## INDEX OF ADVERTISERS


A
Appleton Wire Works, Inc. ..... 46
Appleton Woolen Mills ..... 46

B
Bingham Pump Company ..... 30
Black-Clawson Co. ..... 2
Brubaker Aerial Surveys ..... 46
Bulkley Dunton Pulp Co. ..... 4

C
California Cotton Mills ..... 44
Cameron Machine Co. ..... 48
Cavin, Marshall & Barr ..... 47
Chemipulp Process, Inc. ..... 47
Chromium Corp. of America ..... 47

D
De Guere, L. A. ..... 46
Draper Brothers Co. ..... 45
Du Pont de Nemours & Co., E. I. ..... Outside Back Cover

E
Eastwood-Nealley Corp. ..... 44
Edison Storage Battery Co. ..... 45
Electric Steel Foundry Co. ..... 44

F
Ferguson & Co., Hardy S. ..... 47
Freeport Sulphur Co. ..... 43

G
Great Western Electro-Chemical Co. ..... 3

H
Hardy, George F. ..... 47
Hesse-Ersted Iron Works ..... 46
Hodges, Walter S. ..... 45
Hooker Electrochemical Co. ..... 35
Hotel Multnomah ..... 41
Huyck & Sons Co., F. C. ..... Inside Back Cover

L
Lindsay Wire Weaving Co. ..... 48
Lockport Felt Co. ..... 41

M
Merrick Scale Mfg. Co. ..... 46

N
Nash Engineering Co. ..... 48
Northwest Lead Co. ..... 46

P
Pacific Coast Supply Co. ..... 42
Pennsylvania Salt Mfg. Co. of Washington ..... Inside Front Cover
Perkins-Goodwin Co. ..... 46
Plant Rubber & Asbestos Works ..... 43
Puget Sound Power & Light Co. ..... 41
Pulp Bleaching Co. ..... 32

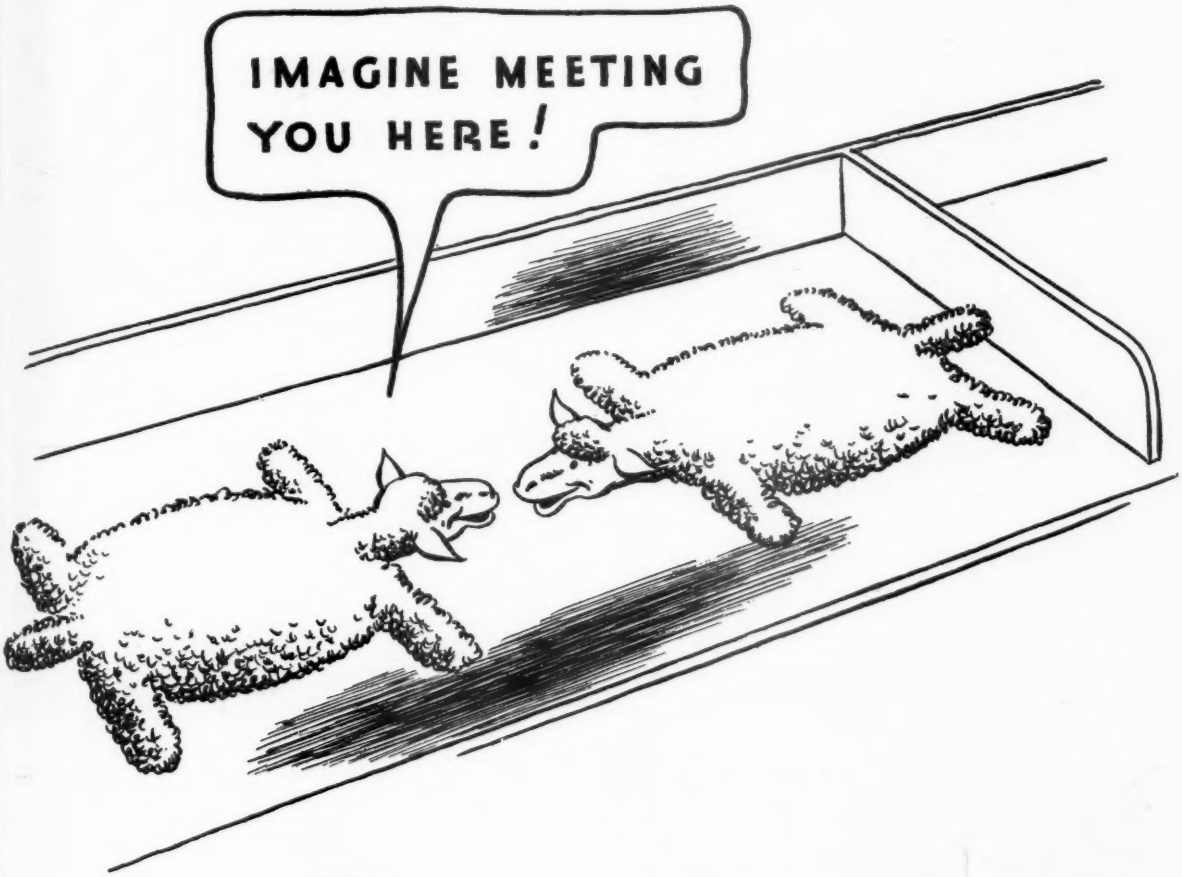
R
Roche Harbor Lime & Cement Co. ..... 47
Ross Engineering Corp., J. O. ..... 46
Rounds-Burchett Limited ..... 46

S
Schoenwerk, O. C. ..... 47
Selden, Stanley ..... 47
Shartle Bros. Machine Co. ..... 2
Shell Oil Co. ..... 46
Shuler & Benninghofen ..... 42
Stebbins Engineering Corp. ..... 1
Stetson-Ross Machine Co. ..... 47
Sumner Iron Works ..... 45

T
Taylor Instrument Companies ..... 36
Texas Gulf Sulphur Co. ..... 38

W
Wallace & Tiernan Co., Inc. ..... 43
Waterbury & Sons Co., H. ..... 46
Western Gear Works ..... 45
Weyerhaeuser Timber Co. ..... 46

*Said the fleece from ENGLAND*
*to the fleece from AUSTRALIA:*




Nothing strange about it! For the Huyck Wool Room is the daily scene of an international wool-gathering!

Fleeces come from Australia, New Zealand, and South Africa; from England and Ireland; from the Argentine, Canada, and the United States. Chosen in the wool markets of the world to meet Kenwood's exacting standards, they are shipped thousands of miles across the seas to the great wool storehouses of F. C. Huyck & Sons. Here, just the right wools are selected and blended to make felts exactly suited to your needs.

KENWOOD WOOL PRODUCTS

*Pacific Coast Representatives*

**PACIFIC COAST SUPPLY CO.**

Pittock Block
Portland, Oreg.

708 White Bldg.
Seattle, Wash.

343 Sansome St.
San Francisco, Calif.

# F. C. HUYCK & SONS

**KENWOOD FELTS · ALBANY, N. Y.**

There's a du Pont Dye
for every paper use
DU PONT DYESTUFFS
E. I. DUPONT DE NEMOURS & CO., INC.
Organic Chemicals Department, Dyestuffs Division, WILMINGTON, DEL.
LIBRARY
U S DEPT OF AGRI
WASHINGTON D C